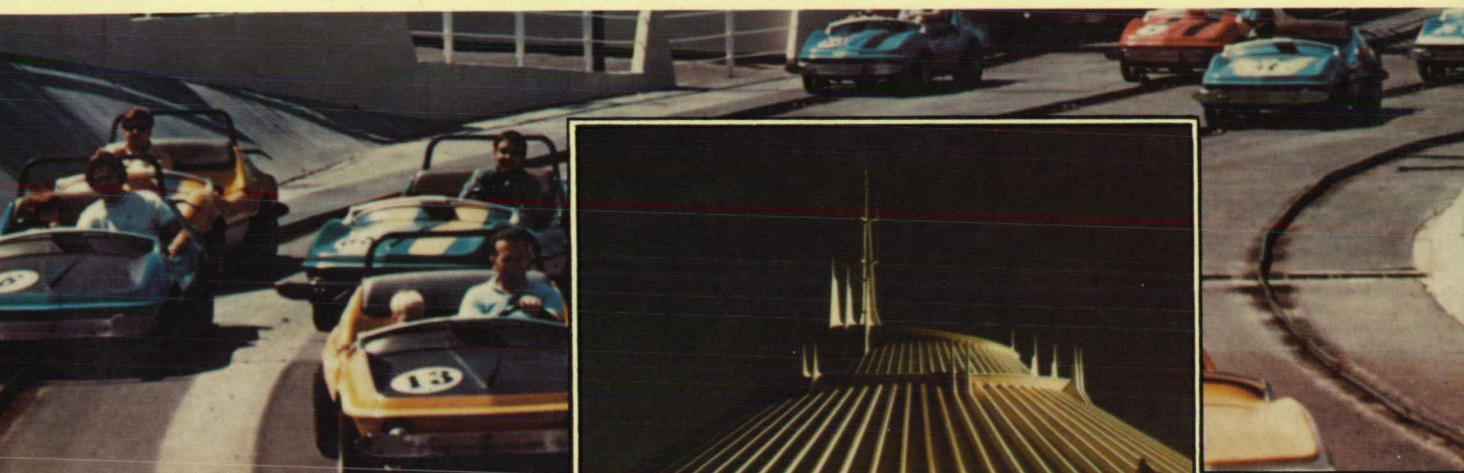


NASA Tech Briefs Index 1977

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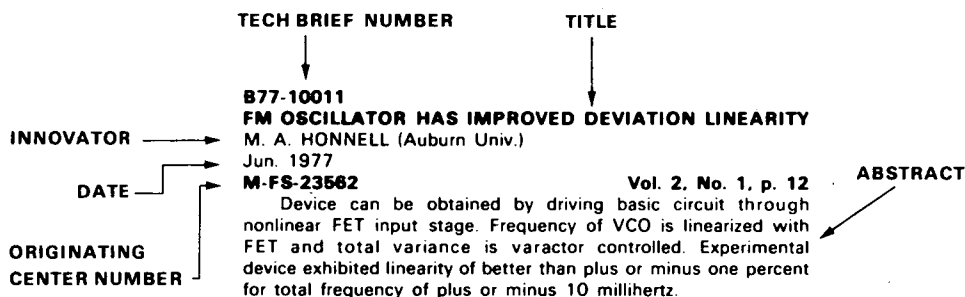
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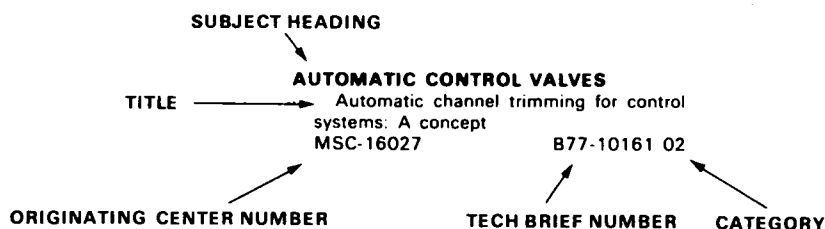
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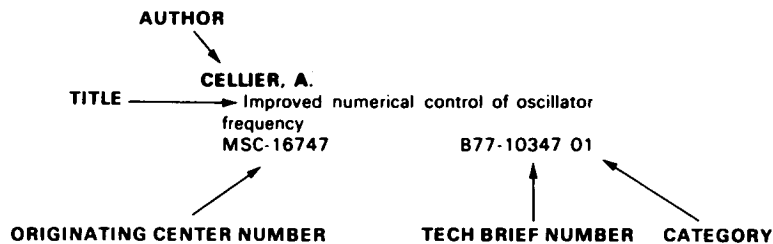
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Four indexes are provided. The first is a subject index, arranged alphabetically by subject heading. Each entry in the subject index includes a Tech Brief number and a category number to aid the user in locating pertinent entries in the abstract section.

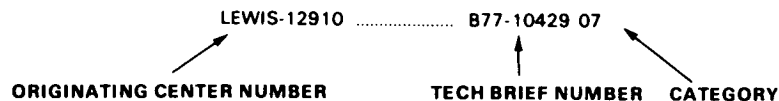


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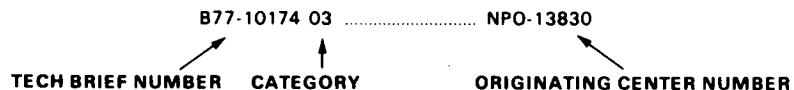
The second index is a personal author index. Entries in this index are arranged alphabetically by author's name. Tech Brief and category numbers are supplied to help the user find the appropriate entries in the abstract section.



The third index relates each originating Center number to the corresponding Tech Brief number and category. Entries in this index are arranged in alphanumeric order by Center number.



The fourth index relates each Tech Brief number to its originating Center number. Entries are arranged in ascending Tech Brief number order.



Originating Center Prefixes

ARC	Ames Research Center
GSFC	Goddard Space Flight Center
HQ	NASA Headquarters
KSC	Kennedy Space Center
LANGLEY	Langley Research Center
LEWIS	Lewis Research Center
M-FS	Marshall Space Flight Center
MSC	Johnson Space Center (formerly Manned Spacecraft Center)
NPO	Jet Propulsion Laboratory/NASA Pasadena Office

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Index to NASA Tech Briefs

February 1978

Abstract Section

01 ELECTRONIC COMPONENTS AND CIRCUITS

B77-10001

BATTERY PEAK-CHARGE VOLTAGE MONITOR

T. A. SHULL

Jun. 1977 See also NASA-TM-X-72669 (N75-30512)

LANGLEY 11978 Vol. 2, No. 1, p. 4

Monitor was designed for use on dual air density satellite, utilizing standard integrated circuit components, thin-film resistors network, plus several passive components. Device measures unit charge and holds data for transmission at later time.

B77-10002

FLEXIBLE SEPARATOR FOR ALKALINE BATTERIES

D. W. SHEIBLEY

Jun. 1977 See also B77-10003; NASA-TM-X-3080 (N74-27535); NASA-TM-X-3199 (N75-17807); NASA-TM-X-3357 (N76-17645); NASA-TM-X-3465 (N77-14585)

LEWIS-12649 Vol. 2, No. 1, p. 4

Device is fabricated from low-cost readily-available commercial-materials by automated methods utilizing conventional paper coating processes. Flexibility of unit prevents cracking and disintegration caused by electrode warpage and dendrite growth, major causes of early battery failure with present separators.

B77-10003

RECHARGEABLE NICKEL-ZINC BATTERIES

D. G. SOLTIS

Jun. 1977 See also B77-10002

LEWIS-12784 Vol. 2, No. 1, p. 4

Device proves superiority in having two and one half to three times the energy content of popular lead-zinc or nickel-cadmium batteries. Application to electric utility vehicles improved acceleration rate and nearly doubled driving range between rechargings. Unit contributes substantially toward realization of practical urban electrical automobiles.

B77-10004

STRONG LIGHTWEIGHT BATTERY HOUSING

W. T. PERREAULT (Martin Marietta Corp.)

Jun. 1977

M-FS-23079 Vol. 2, No. 1, p. 5

Unit holds fifteen cells weighing 1.3 kilogram each, withstands vibration continuously, can be pressurized to 25 psig (175 x 1000 N/M to the 2nd power). Unit offers potential of low-cost fabrication and increased accessibility to enclosed battery cells. Device may double as utility chest for tool storage and other items.

B77-10005

SINGLE-FILL-POINT BATTERY RESERVOIR

R. MANOLI (Rockwell Intern. Corp.) and B. R. ULRICH (Rockwell

Intern. Corp.)

Jun. 1977

M-FS-16801

Vol. 2, No. 1, p. 6

Device is clear plastic manifold, which is filled with one pint of distilled water from single point and then is sealed with plastic cap. When snapped onto an existing storage battery, device provides steady source of water for uniform distribution to all cells.

B77-10006

ELECTRICAL GENERATOR USES OCEAN WAVES

D. C. GRANA and R. T. WILEM

Jun. 1977

LANGLEY-11551

Vol. 2, No. 1, p. 7

Device converts up-and-down motion of ocean to electrical energy. Plunging generator delivers energy to be stored in battery and used to operate remote data gathering stations. Concept may be applied to land or air use if plunging motion is supplied.

B77-10007

A SPIN-MOTOR ROTATION DETECTOR

J. E. KUSLICH (Honeywell, Inc.)

Jun. 1977

GSFC-11953

Vol. 2, No. 1, p. 8

Detector for square wave driven motor detects a sharp characteristic change in shape of spin-neutral waveform that occurs as motor slips into synchronization with totaling field it tries to follow. Device is practically insensitive to spin-motor neutral current amplitude.

B77-10008

VERY LOW-POWER POWER SUPPLIES

N. L. ROY (TRW, Inc.) and D. K. HOFFMASTER (TRW, Inc.)

Jun. 1977

LANGLEY-12117

Vol. 2, No. 1, p. 9

Unit may be used in systems requiring milliwatt power for bias voltage functions and can be used as control mechanism for large electric power systems. Logic and energy storage techniques yield processing efficiencies of 1000 to 1 over conventional designs.

B77-10009

BRIDGE/AMPLIFIER CONFIGURATION FOR SWITCHED ARRAYS

O. D. BOHNING (Rockwell Intern. Corp.)

Jun. 1977

LANGLEY-11652

Vol. 2, No. 1, p. 10

Bridge network connected to differential amplifier and used with bubble-domain memories draws no power during standby and can be arrayed with other bridge amplifiers of like design. Two-node arrangement greatly simplifies conventional configurations where more than two nodes are involved.

B77-10010

CONSTANT-POWER SOURCE FOR RESISTIVE LOAD

E. M. NAGLE (RCA)

01 ELECTRONIC COMPONENTS AND CIRCUITS

Jun. 1977

M-FS-23171

Vol. 2, No. 1, p. 11

Device uses operational amplifiers, dividers, subtractor, pulsed reference amplifier, and associated integrated-circuit components to deliver constantly-adjustable continual power to variable-resistance load for specialized low-power instrumentation applications.

B77-10011

FM OSCILLATOR HAS IMPROVED DEVIATION LINEARITY

M. A. HONNELL (Auburn Univ.)

Jun. 1977

M-FS-23562

Vol. 2, No. 1, p. 12

Device can be obtained by driving basic circuit through nonlinear FET input stage. Frequency of VCO is linearized with FET and total variance is varactor controlled. Experimental device exhibited linearity of better than plus or minus one percent for total frequency of plus or minus 10 millihertz.

B77-10012

PRODUCTION OF LARGE 'VIOLET' SOLAR CELLS

P. ILES (Globe-Union Inc.)

Jun. 1977

M-FS-23549

Vol. 2, No. 1, p. 13

Devices respond better to ultraviolet radiation than conventional cells and respond better over whole visible spectrum. Response is improved because of very shallow (0.1 micrometer) highly doped n(+) layer diffused into P silicon.

B77-10013

HIGH-VOLTAGE CAPACITOR-COUPLED CIRCUIT

W. W. FRAME (Ball Bros. Res. Corp.)

Jun. 1977

MSC-16034

Vol. 2, No. 1, p. 14

Inexpensive scheme for photomultipliers reduces capacitor-generated noise susceptibility.

B77-10014

LOW-COST POLYCRYSTALLINE PROCESS FOR SOLAR CELLS

T. L. CHU (Southern Methodist Univ.)

Jun. 1977

GSFC-12022

Vol. 2, No. 1, p. 15

Economical batch process includes resolidification step to improve conversion efficiency. Experimental models made by process vary in conversion efficiency from 1.4 to more than 6 percent.

B77-10015

LOW-COST SOLAR-CELL FABRICATION

J. A. AMICK (RCA) and B. F. WILLIAMS (RCA)

Jun. 1977

NPO-13992

Vol. 2, No. 1, p. 16

Processing steps are reduced by using technique of electroless plating. Metalization and one doping steps are combined, and only one heat treatment is required. Concept is modification to method of fabricating solar cells by diffusing different dopants into opposite sides of a silicon wafer.

B77-10016

CONNECTOR WITH CABLE-TO-CHASSIS STRAIN RELIEF

K. W. TUSKIND (RCA)

Jun. 1977

GSFC-12164

Vol. 2, No. 1, p. 18

Electronic connector adapted from readily available components simplifies electronic packaging and interconnection wiring in assemblies that consist of several identical printed-wiring boards.

B77-10017

ELECTRO-OPTICALLY-INDEXED MICROWAVE SWITCH

D. E. NEFF, D. L. NIXON, and H. F. REILLY

Jun. 1977

NPO-11851

Vol. 2, No. 1, p. 19

Mechanical parts used in conventional switches to index stepper motor that drives switch elements are replaced by

optoelectronic indexing device that controls magnetic-detent motor. Unit eliminates major source of wear and maintains detent accuracy longer. Design of device achieves reduction of insertion loss, crosstalk, and wave guide reflections when receiving and transmitting.

B77-10018

COLLAPSIBLE CORRUGATED HORN ANTENNA

D. E. BARTHLOME

Jun. 1977

LANGLEY-11745

Vol. 2, No. 1, p. 20

Lightweight readily-collapsible device utilizes conical configuration of metal rings which permit flexible wall material to be smooth and flat when unit is extended.

B77-10019

LIGHTNING-ACTIVATED ELECTRICAL GROUND FOR CABLE SHIELDS

K. D. CASTLE

Jun. 1977

MSC-12745

Vol. 2, No. 1, p. 21

Device protects cables used to connect circuits that are physically separated from lightning-induced high-voltage. Circuit returns to normal high impedance open configuration after lightning-induced shield voltage is dissipated.

B77-10020

FAST MEASUREMENT OF MOS CAPACITORS

E. T. BATES, JR., S. P. LI (California State Polytech. Univ.), and M. P. RYAN (California State Polytech. Univ.)

Jun. 1977

NPO-13892

Vol. 2, No. 1, p. 22

Method allows flatband voltage measurement of capacitors to be taken quickly and precisely while capacitor is subject to desired conditions.

B77-10021

LOGIC-STATE-CHANGE INDICATOR AND FREQUENCY DOUBLER

J. I. HUDGINS

Jun. 1977

GSFC-12169

Vol. 2, No. 1, p. 22

Low-power TTL circuit produces an output pulse whenever logic level at its input terminal changes. Circuit can also be used for doubling square-wave frequency.

B77-10022

DIGITAL FILTER FOR VOICEBAND NOISE

T. R. EDWARDS and H. W. ZEANA

Jun. 1977

M-FS-23699

Vol. 2, No. 1, p. 23

Device operates over 300 to 3000 hertz range and contains 10 bit, 10 kilohertz converters and equally fast registers. Combination and weights of digital samples of analog signal are utilized by device to reconstruct signal with noise above 3000 hertz eliminated.

B77-10150

BIDIRECTIONAL AMPLIFIER

L. D. HOLLEY, J. W. CALDWELL (Federal Elec. Corp.), and D. R. INGALLS (Federal Elec. Corp.)

Sep. 1977

KSC-10856

Vol. 2, No. 2, p. 175

Two-stage transformer-coupled device amplifies incoming and outgoing signals of different frequencies being propagated in both directions along single line.

B77-10151

WIDE-DYNAMIC-RANGE DETECTOR

R. J. MATHESON (U. S. Dept. of Commerce), F. W. FIELD (Hughes Aircraft Co.), and S. SABAROFF (Hughes Aircraft Co.)

Sep. 1977

GSFC-12149

Vol. 2, No. 2, p. 175

Circuit drives diode detector with amplifier having high and constant output impedance. Basic circuit could be used in high-performance AM radios, tape players, and phonographs.

B77-10152**DIGITAL FREQUENCY-OFFSET DETECTOR**

R. W. BOGART (Westinghouse Elec. Corp.) and M. J. JUENGST (Westinghouse Elec. Corp.)
Sep. 1977

MSC-16358**Vol. 2, No. 2, p. 177**

Simple, low-cost device with designer-selectable tolerances provides accurate frequency comparison with minimal circuitry and ease of adjustment. Warning alerts if frequencies being compared fall outside selected tolerance. Device can be applied to any electronic system where accurate timing or frequency control is important.

B77-10153**THERMAL-IMPEDANCE TEST FOR HYBRID POWER DEVICES**

R. E. GARDNER (Rockwell Intern. Corp.), R. L. JONES (Rockwell Intern. Corp.), and L. H. SEYMOUR (Rockwell Intern. Corp.)
Sep. 1977

MSC-16643**Vol. 2, No. 2, p. 178**

Production-line electrical test verifies thermal impedance of hybrid device by determining device-junction temperature.

B77-10154**SAVE POWER IN AC INDUCTION MOTORS**

F. J. NOLA
Sep. 1977

M-FS-23280**Vol. 2, No. 2, p. 179**

Relatively simple and inexpensive circuitry improves power factor and reduces power dissipation in induction motors operating below full load. Electronic control loop conserves energy by reducing voltage applied to lightly loaded motor. Circuit forces motor to run at constant predetermined optimum power factor, regardless of load or line voltage variations. Solid-state switch varies voltage.

B77-10155**POWER SWITCH/FILTER FOR DIGITAL CIRCUITS**

H. R. MCHUGH (Ball Bros. Res. Corp.)
Sep. 1977

MSC-16442**Vol. 2, No. 2, p. 181**

Device reduces power consumption by clocking on active components only as needed.

B77-10156**'EXCLUSIVE-OR' FREQUENCY MULTIPLIER**

K. G. HARF (Singer Co.)
Sep. 1977

MSC-16677**Vol. 2, No. 2, p. 181**

Degree of signal phase shift determines desired multiplication factor.

B77-10157**THREE-LEVEL SIGNAL SAMPLER HAS AUTOMATIC THRESHOLD**

S. S. BROKL, W. J. HURD, R. F. JURGENS, and E. R. RODEMICH
Sep. 1977

NPO-14042**Vol. 2, No. 2, p. 182**

Statistical errors introduced by D-to-A conversion are reduced.

B77-10158**PULSE-WIDTH-MODULATED HIGH-CURRENT POWER SUPPLY**

E. A. MESSANO (GE) and H. E. MOORE (GE)
Sep. 1977

MSC-14668**Vol. 2, No. 2, p. 184**

Power supply achieves efficiency rating of approximately 80 percent at rated maximum output current. Protection circuitry prevents logic/memory loads from losing stored data if supply protection circuit initiates power shut down; prevents damage caused by overtemperature condition; protects logic/memory load from undervoltage to overvoltage conditions. Warning signal indicates power shutdown.

B77-10159**MIS DIODE STRUCTURE IN AS⁺-IMPLANTED CDS**

J. A. HUTCHBY
Sep. 1977

LANGLEY-12156**Vol. 2, No. 2, p. 185**

Increased turnover voltage suggests metal-insulator-semiconductor structure.

B77-10160**NOISE REDUCTION IN PHOTOMULTIPLIER CIRCUITS**

J. M. FRANKE and J. H. GOAD, JR.
Sep. 1977

LANGLEY-12091**Vol. 2, No. 2, p. 186**

Simple damping device inserted in cable at power supply acts as filter, thus eliminating noise pulses in photomultiplier tube.

B77-10243**SOLAR METER WITH SILICON PHOTOCELL**

G. YANOW
Nov. 1977

NPO-14136**Vol. 2, No. 2, p. 299**

Instrument for measuring light falling on given spot uses simple silicon photovoltaic cell as sensing element. It measures all light at location: direct, scattered, reflected, or reradiated. Silicon cell is coated with thick antireflecting layer of silicon monoxide and is enclosed in glass dome. Large heat sink reduces temperature fluctuations. Instrument is accurate within few percentage points over angle of Sun's arc across sky.

B77-10244**HALL-EFFECT TOGGLE SWITCH**

S. A. CHEVALIER, A. B. OLSEN, and C. A. VITTORIO (Honeywell, Inc.)
Nov. 1977 See also B77-10245

MSC-16354**Vol. 2, No. 2, p. 300**

Device performs same switching functions as mechanical switches, occupies same or less panel space, requires only one power source (which is compatible with the load), and operates under severe conditions of temperature, vibration, and shock.

B77-10245**MAGNETIC ROTARY SWITCH**

J. K. SARKINEN (Honeywell, Inc.)
Nov. 1977 See also B77-10244

MSC-16624**Vol. 2, No. 2, p. 301**

Innovation uses solid-state Hall-effect sensor to turn electrical circuit on or off. Though normally held off by a small bias magnet, Hall device turns on when strong actuating magnet comes into proximity. Drive magnet moves actuating magnet against restraint of detent magnet.

B77-10246**INDIVIDUAL CONTROL OF RELAYS IN A MATRIX**

T. O. ANDERSON
Nov. 1977

NPO-14095**Vol. 2, No. 2, p. 302**

Output of latching four-input open-collector NAND gate is connected to isolating reed relay and intersection pushbutton. In matrix assembly, edge and corner circuits will require fewer gates, since they originate control lines. Collective row or column reset buttons operate on respective control-line originating points, and control-board disable switch operates on line connecting ground side of all intersection pushbuttons.

B77-10247**VERSATILE SOLID-STATE RELAY**

D. A. FOX (Westinghouse Elec. Corp.)
Nov. 1977

M-FS-23632**Vol. 2, No. 2, p. 304**

Solid-state relay (SSR), containing multinode control logic, is operated as normally open, normally closed, or latched. Moreover several can be paralleled to form two-pole or double-throw relays. Versatile unit ends need to design custom control circuit for every relay application. Technique can be extended to incorporate selectable time delay, on operation or release, or pulsed output.

01 ELECTRONIC COMPONENTS AND CIRCUITS

B77-10248

INEXPENSIVE PULSE-TRAIN CONVERTER MEASURES ANALOG VOLTAGE

J. C. STURMAN

Nov. 1977

LEWIS-12912

Vol. 2, No. 2, p. 305

Converter measures small voltages or currents in presence of very large common-mode voltages (thousands of volts ac or dc). Advantages are low power consumption, transmission via single isolated channel, simplicity, and operation from single-polarity power supply.

B77-10249

EXTRASENSITIVE PHASE-LOCKED-LOOP CIRCUIT

E. J. NYIRI (Motorola, Inc.)

Nov. 1977

MSC-16770

Vol. 2, No. 2, p. 307

Modified phase-locked loop (PLL) generates clock from incoming data signal. To minimize effects of threshold phase-detector gain variations, the PLL uses a dither oscillator, a dither band-pass filter, and correlator instead of coherent amplitude detector.

B77-10250

CAPACITIVE CONNECTORS FOR DIGITAL-DATA LINES

P. A. STUDER

Nov. 1977

GSFC-12238

Vol. 2, No. 2, p. 308

Proposed connector consisting of twin metal films separated by thin layers of insulating material transmits digital pulses capacitively. There is no direct contact between metal films; therefore, there is no ohmic contact drop and no wear when connections are changed. Since metal films are sealed in insulating material, there is no corrosion from exposure to atmosphere.

B77-10251

SIMPLE CONSTANT-CURRENT-REGULATED POWER SUPPLY

D. H. E. PRIEBE and J. C. STURMAN

Nov. 1977

LEWIS-12894

Vol. 2, No. 2, p. 309

Supply incorporates soft-start circuit that slowly ramps current up to set point at turn-on. Supply consists of full-wave rectifier, regulating pass transistor, current feedback circuit, and quad single-supply operational-amplifier circuit providing control. Technique is applicable to any system requiring constant dc current, such as vacuum tube equipment, heaters, or battery charges; it has been used to supply constant current for instrument calibration.

B77-10252

INEXPENSIVE SOLID-STATE MONITORING CIRCUIT

D. H. HARDY

Nov. 1977

LEWIS-12848

Vol. 2, No. 2, p. 310

Circuit reduces intermittent fan-flutter openings in airflow switch. Circuit ignores brief switch openings due to contact oscillations; however, if switch is open longer than selected interval, control circuit shuts down system and sounds alarm.

B77-10253

BIAS-FIELD EQUALIZER FOR BUBBLE MEMORIES

G. E. KEEFE (IBM)

Nov. 1977

M-FS-23189

Vol. 2, No. 2, p. 311

Magnetoresistive Perm-alloy sensor monitors bias field required to maintain bubble memory. Sensor provides error signal that, in turn, corrects magnitude of bias field. Error signal from sensor can be used to control magnitude of bias field in either auxiliary set of bias-field coils around permanent magnet field, or current in small coils used to remagnetize permanent magnet by infrequent, short, high-current pulse or short sequence of pulses.

B77-10254

DOUBLE-DUTY LOUDSPEAKER

E. JOSCELYN (Instrument Systems Corp.)

Nov. 1977

MSC-16263

Vol. 2, No. 2, p. 312

Dual-coil speaker transmits warning signals and intercom messages. It saves power by allowing signals to be heard with intercom electronics turned off.

B77-10255

DC TRANSFORMER USES MAGNETORESISTORS

S. M. KHANNA and E. W. URBAN

Nov. 1977

M-FS-23659

Vol. 2, No. 2, p. 313

Study indicates secondary superconductor layer could be formed out of magnetoresistive material, creating transformer with wider operating-temperature range and improved efficiency.

B77-10256

PRECISION VOLTAGE DIVISION WITHOUT PRECISION PARTS

M. G. STRANGE

Nov. 1977

GSFC-12182

Vol. 2, No. 2, p. 314

Active voltage divider applies different logic signals to field-effect transistor switches to generate various voltage levels at output. Circuit is compact and reduces errors from drifting component values.

B77-10257

LOW-INDUCTANCE BUS LINES

A. KERNICK (Westinghouse Elec. Corp.)

Nov. 1977

MSC-16730

Vol. 2, No. 2, p. 316

Laminated bus strips and bifilar litz cable connectors for high-power rectifiers, thyrists, and transistors provide low inductance and eliminate electromagnetic interference in high-power circuits. These techniques offer significant cost advantages because of ease of assembly and consistent high quality of product. Effectiveness makes general usage in static power conversion likely.

B77-10258

LOW-INSERTION-RESISTANCE CURRENT MONITOR

J. PAULKOVICH

Nov. 1977

GSFC-12278

Vol. 2, No. 2, p. 318

Circuit automatically corrects for drifting offset voltage, providing long-term stability for current-monitoring instruments. Circuit is stable over wide temperature range; therefore, no compensation for temperature variations is necessary. Besides consuming little power, circuit introduces negligible noise on monitored lines and responds linearly to monitored circuit.

B77-10259

OP-AMP GYRATOR SIMULATES HIGH Q INDUCTOR

W. C. SUTHERLAND

Nov. 1977 See also NASA TM-X-64995 (N76-20367)

M-FS-23514

Vol. 2, No. 2, p. 318

Gyrator circuit consisting of dual operational amplifier and four resistors inverts impedance of capacitor to simulate inductor. Synthetic inductor has high Q factor, good stability, wide bandwidth, and easily determined value of inductance that is independent of frequency. It readily lends itself to integrated-circuit applications, including filter networks.

B77-10260

SAFE HANDLING PRACTICES FOR ELECTROSTATIC-SENSITIVE DEVICES

L. L. HERRING (Rockwell Intern. Corp.)

Nov. 1977

MSC-16642

Vol. 2, No. 2, p. 320

Review is detailed compilation of safe handling practices for Metal-Oxide Semiconductor (MOS) circuit elements and other devices that are susceptible to damage by electrostatic discharge. Article lists safety procedures for all aspects of handling and use of these components. Included are guidelines for setting up static-free work station and list of materials and equipment

needed to maintain antistatic protection. Appendix gives vendors of these items.

B77-10335**SIMPLER PROCESS PRODUCES MORE-EFFICIENT SOLAR CELL**

H. J. HOVEL (IBM) and J. M. WOODALL (IBM)
Mar. 1977

LANGLEY-12180 Vol. 2, No. 4, p. 429

Single step process produces gallium arsenide solar cells having uniform and continuous Ga(1-x)Al(x)As layer thinner than 0.5 micrometers, with an efficiency of 18.5 percent.

B77-10336**ANODIZATION IMPROVES GAAS SOLAR CELL PERFORMANCE**

H. J. HOVEL (IBM) and J. M. WOODALL (IBM)
Mar. 1977

LANGLEY-12184 Vol. 2, No. 4, p. 430

Anodization technique produces GaAs pn-junction solar cells exhibiting improved response to high energy photons and higher open circuit voltages through reduction of reflection loss.

B77-10337**NEW PROCESS PRODUCES HIGH-POWER SCHOTTKY DIODES**

L. F. CORDES (GE), M. GARFINKEL (GE), and E. A. TAFT (GE)
Mar. 1977 See also NASA-CR-134925 (N76-21391)

LEWIS-12749 Vol. 2, No. 4, p. 431

Processing procedure using low-temperature platinum silicide, results in successful high-yield fabrication of large-area mesa-geometry Schottky diodes, with reverse breakdown voltages as high as 150 volts and leak currents less than 5 milliamps at 212 F.

B77-10338**INEXPENSIVE SILICON SHEETS FOR SOLAR CELLS**

T. F. CISZEK (IBM) and G. H. SCHWUTKE (IBM)
Mar. 1977

NPO-14069 Vol. 2, No. 4, p. 432
Technique of producing silicon sheets by drawing gridlike or porous graphite gauze through silicon melt is readily adaptable to mass production, making process applicable to inexpensive manufacture of solar cell arrays.

B77-10339**LOW-RESISTANCE CONTACTS FOR GaAlAs/GaAs CELLS**

H. J. HOVEL (IBM) and J. M. WOODALL (IBM)
Feb. 1977

LANGLEY-12201 Vol. 2, No. 4, p. 433

Bimetallic contacts utilizing palladium and aluminum, gold, silver, or chromium, are used in reduction of series resistance in GaAlAs/GaAs solar cells, thereby improving cell reliability.

B77-10340**COMPLEMENTARY DMOS/VMOS INTEGRATED-CIRCUIT-STRUCTURE**

M. D. JHABVALA
Mar. 1977

GSFC-12190 Vol. 2, No. 4, p. 434

Complementary metal-oxide-semiconductor (CMOS) structure has relatively high speed, high breakdown voltage, high transconductance and high packing densities.

B77-10341**WELDING SINGLE-CRYSTAL SILICON TO MOLYBDENUM**

K. N. CHANG and M. P. DONOVAN (Boeing Co.)
Mar. 1977

NPO-13735 Vol. 2, No. 4, p. 435

Technique produces reliable bonds of silicon crystal to molybdenum able to withstand continuous operation at 1,000 C in vacuum environment.

B77-10342**PRIMARY-CONTROLLED AC-TO-DC POWER CONVERTER**

P. HARPER (Sperry Rand Corp.) and L. N. MERCER (Sperry

Rand Corp.)

Mar. 1977

M-FS-23198

Vol. 2, No. 4, p. 436

Switch operation of power transformer/rectifier dc power supply requires fewer turns of larger wire and regulates output voltage.

B77-10343**DIFFERENTIAL CURRENT DRIVER**

G. F. KOPP (Honeywell Inc.)
Mar. 1977

MSC-16475

Vol. 2, No. 4, p. 437

Three operational amplifiers in closed-loop configuration, form stable current driver for variable non-ground-reference loads. Circuit uses lower-voltage power supplies than other circuits of this type, and provides constant voltage-to-current gain in low noise configuration. Additional reactive elements could offer frequency compensation for complex loads.

B77-10344**DIGITAL-SIGNAL TRANSFER BETWEEN ISOLATED SYSTEMS**

R. HARPER (Sperry Rand Corp.)
Mar. 1977

MSC-16508

Vol. 2, No. 4, p. 437

Simple circuit, compatible with CMOS logic, transfers digital signal between electrically isolated systems, without transistors, and minimum of discrete components.

B77-10345**CIRCUIT REGULATES VOLTAGE OF DC-DC CONVERTER**

W. T. HARRIGILL, JR. and I. T. MYERS

Mar. 1977 See also NASA-TM-X-73427 (N76-27474)

LEWIS-12791

Vol. 2, No. 4, p. 438

Method of regulating voltage-multiplier dc-dc converter utilizes regulating circuit that directly controls only fraction of input voltage, resulting in lightweight, efficient regulator.

B77-10346**CIRCUIT MONITORS POWERLINE INTERRUPTIONS**

N. E. SIMMONS (Rockwell Intern. Corp.) and J. O. STRICKLEN (Rockwell Intern. Corp.)

Mar. 1977 See also B76-10557

MSC-16763

Vol. 2, No. 4, p. 439

Simple circuit when combined with pulse detector detects momentary interruptions of 400-cycle ac signal. Circuit has been used during shock and vibration testing of electronic hardware to determine if tests caused interruptions of normal circuit operation.

B77-10347**IMPROVED NUMERICAL CONTROL OF OSCILLATOR FREQUENCY**

A. CELLIER (TRW Inc.), D. C. HUEY (TRW Inc.), and L. N. MA (TRW Inc.)

Mar. 1977

MSC-16747

Vol. 2, No. 4, p. 440

Numerically-controlled oscillator is key element in phase-locked loop that generates exact frequency and phase of noise-corrupted input signal. Device is applicable to communication and tracking equipment.

B77-10348**DIODES STABILIZE LED OUTPUT**

R. A. DETERS (Ball Bros. Res. Corp.)
Mar. 1977

MSC-16620

Vol. 2, No. 4, p. 441

Small-signal diodes are placed in series with light-emitting diodes (LED's) to stabilize LED output against temperature fluctuations. Simple inexpensive method compensates for thermal fluctuations over a broad temperature range. Requiring few components, technique is particularly useful where circuit-board space is limited.

B77-10349**CHARGE-COUPLED DIFFERENTIAL AMPLIFIER**

01 ELECTRONIC COMPONENTS AND CIRCUITS

C. R. HEWES (Texas Instr., Inc.)
Mar. 1977

LANGLEY-12110 Vol. 2, No. 4, p. 442

Device solves problem of differential voltage gain in sampled-data metal-oxide semiconductor, producing gain at any frequency compatible with CCD operation, with low noise, low power, good linearity, and high stability.

B77-10350 SIMPLE, ACCURATE ANALOG DIVIDER FOR LOW DIVISOR VALUES

A. G. BIRCHENOUGH
Mar. 1977

LEWIS-11881 Vol. 2, No. 4, p. 443

Electronic analog divider circuit employs, over certain range, current-exponential voltage characteristics of diode to obtain better accuracy at low denominator values.

B77-10351 ELECTRONIC SHAFT-ANGLE ENCODER

J. A. POWELL
Mar. 1977

LEWIS-12832 Vol. 2, No. 4, p. 444

Contactless encoder is used at higher angular velocities and for objects lacking integral supporting shaft.

B77-10352 TWISTED SHIELD-PAIR TRANSMISSION LINE

W. N. LIND (Rockwell Intern. Corp.) and G. H. WADDY (Rockwell Intern. Corp.)

Mar. 1977

MSC-16702 Vol. 2, No. 4, p. 445

Lightweight cable forms balanced transmission line and replaces costlier coaxial cables for multiplex-signal transmission. Cable is fabricated with carefully-controlled electrical characteristics and functions without tuning networks at frequencies up to 10 MHz.

B77-10353 BRUSHLESS TACHOMETER GIVES SPEED AND DIRECTION

F. J. NOLA

Mar. 1977

M-FS-23175 Vol. 2, No. 4, p. 446

Brushless electronic tachometer measures rotational speed and rotational direction, maintaining accuracy at high or low speeds. Unit is particularly useful in vacuum environments requiring low friction.

B77-10354 CHOOSING THE RIGHT CONNECTOR

C. R. LYNCH (Martin Marietta Corp.)

Mar. 1977

M-FS-23785 Vol. 2, No. 4, p. 447

User design handbook for electrical connection describes general features of representative connectors their shell or body, insert, contacts, coupling, mounting, accession. It discusses electrical performance and mechanical requirements handbook guides designs in selecting electrical connectors according to total system concept.

B77-10355 MASK AND DISPLAY PROGRAM

D. ROUTH and D. S. WOO (Sperry Rand Corp.)

Mar. 1977

M-FS-23625 Vol. 2, No. 4, p. 448

Program is used to create complex lines, shapes, circles and alpha-numeric characters rapidly and easily, and format them for use on some pattern generation. System is applicable as aid to designers of microelectronics, integrated optics, bubble memories and other devices requiring precise artwork.

02 ELECTRONIC SYSTEMS

B77-10023 DEMAND-CONTROLLED LIGHTING

L. J. OWENS

Jun. 1977

KSC-11010 Vol. 2, No. 1, p. 27

Automatic lighting is controlled by photocell that measures intensity of available light. Photocell drives motor which operates mercury switches controlling indoor illumination sources. Device effects increase in indoor illumination intensity when illumination input to cell is insufficient. Reverse is true if input is too great.

B77-10024 ANGLE-INDICATING DIGITAL SERVO

G. T. PARRA

Jun. 1977

ARC-11036 Vol. 2, No. 1, p. 28

Device determines position of capacitive pickup relative to gravity-stabilized inductive element. Self nulling bridge with digital readout is faster and more accurate than electromechanical equivalent.

B77-10025 GAIN AND PHASE-MARGIN MEASUREMENTS

B. D. PIERCE (Ball Bros. Res. Corp.)

Jun. 1977

NPO-13296 Vol. 2, No. 1, p. 29

Simple battery-powered test circuit will contribute negligible error when taking open-loop measurements of gain and phase parameters. This is especially helpful when measuring high-gain circuits containing integrators.

B77-10026 SIMPLIFIED COMMAND AND RANGE DETECTION SYSTEM

S. A. BUTMAN and J. R. LESH

Jun. 1977

NPO-13753 Vol. 2, No. 1, p. 30

Communication system processes subcarrier that is modulated with sequential range codes and with command data. Loop locks in on range codes as they occur in sequence. When range code modulated with data-frequency arrives, loop switches to DEMOD to receive data.

B77-10027 DIFFERENTIAL PULSE-CODE MODULATION

C. F. HERMAN

Jun. 1977

MSC-12506 Vol. 2, No. 1, p. 32

Systems encoding and decoding method allows data to be transmitted with less bandwidth than required for conventional system codes, and is not affected by data-transition density. In addition it requires no direct-current response of transition link and there is little ambiguity in resolution of digital data.

B77-10028 AIRCRAFT-NOISE SYNTHESIZER

T. J. BROWN, C. A. POWELL, and P. A. BICKFORD (Time Data Corp.)

Jun. 1977

LANGLEY-11858 Vol. 2, No. 1, p. 33

Digital synthesis system has been designed and is being used for aircraft noise simulation. Device is extremely desirable for research into effects of aircraft noise on people. Unit could be modified for use in road or rail vehicle noise simulation, and most other applications that involve time varying acoustical parameters.

B77-10029 COMBINED PAM/PCM AUDIO SWITCHING SYSTEM

D. L. ABBEY (Rockwell Intern. Corp.)

Jun. 1977

KSC-11015 Vol. 2, No. 1, p. 34

System is well suited to PBX telephone exchange. Economic electronic changing offers extensive conference capability in telephone communication. System may be used for party to party calls as well.

B77-10030
PRIORITY PROTOCOL AND CONTROL CIRCUIT
T. O. ANDERSON
Jun. 1977

NPO-13901 Vol. 2, No. 1, p. 35
Device provides ambiguity-free handling of requests in intercomputer communications link. System consists of three request lines in each direction, interlock comparators, and priority decoders. Wiring arrangement assures distinction between inbound and outbound terminals.

B77-10031
ULTRASTABLE-FREQUENCY DISTRIBUTION SYSTEM
J. W. MACCONNELL and R. L. SYDNOR
Jun. 1977

NPO-13836 Vol. 2, No. 1, p. 36
System automatically compensates for path perturbations between transmitter (master) and receiver (slave) sites, and thereby allows single source, such as a hydrogen maser, to serve as frequency reference for multiple users. Highly accurate reference can be transmitted at cost much lower than for sophisticated onsite frequency standard.

B77-10032
TIME-DIVISION MULTIPLEXER USES DIGITAL GATES
C. E. MYERS (Federal Elec. Corp.) and A. E. VREELAND (Federal Elec. Corp.)
Jun. 1977

KSC-10878 Vol. 2, No. 1, p. 37
Device eliminates errors caused by analog gates in multiplexing a large number of channels at high frequency. System was designed for use in aerospace work to multiplex signals for monitoring such variables as fuel consumption, pressure, temperature, strain, and stress. Circuit may be useful in monitoring variables in process control and medicine as well.

B77-10033
IMPROVED METHOD OF SIGNATURE EXTRACTION
D. CHRISTIANSON (Environ. Res. Inst. of Michigan), M. GORDON (Environ. Res. Inst. of Michigan), R. KISTLER (Environ. Res. Inst. of Michigan), F. J. KRIEGLER (Environ. Res. Inst. of Michigan), S. LAMPERT (Environ. Res. Inst. of Michigan), R. E. MARSHALL (Environ. Res. Inst. of Michigan), R. MCLAUGHLIN (Environ. Res. Inst. of Michigan), and V. SMITH (Environ. Res. Inst. of Michigan)
Jun. 1977

LANGLEY-12101 Vol. 2, No. 1, p. 38
System promises capability of rapidly processing large amounts of data generated by currently available and planned multispectral sensors, such as those utilized on aircraft and spacecraft. Techniques developed for system, greatly decrease operator time required for signature extraction from multispectral data base.

B77-10034
DISTORTION IN AM-BASEBAND TELEMETRY
W. E. SALTER (Sperry Rand Corp.)
Jun. 1977

M-FS-22180 Vol. 2, No. 1, p. 40
Report presents very thorough and rigorous analysis of bandwidths and filters required to achieve a specific error. Included is an investigation of contribution to error of 3- and 6-pole Chebyshev, Butterworth, and Bessel filters. Also included is methodology for designing DSB/FM telemetry system to make optimum use of available bandwidth while reducing error toward its theoretical minimum.

B77-10161
AUTOMATIC CHANNEL TRIMMING FOR CONTROL SYSTEMS: A CONCEPT
R. J. VANDERVOORT (Honeywell, Inc.) and H. A. SYKES (Honeywell, Inc.)

Sep. 1977
MSC-16027 Vol. 2, No. 2, p. 189
Set of bias signals added to channel inputs automatically normalize differences between channels. Algorithm and second feedback loop compute trim biases. Concept could be applied to regulators and multichannel servosystems for remote manipulators in undersea mining.

B77-10162
SECURE COMMUNICATIONS SYSTEM
G. D. DOLAND (Lockheed Electronics Co.)
Sep. 1977

MSC-16462 Vol. 2, No. 2, p. 190
System employs electronically randomized variant of quadrature modulation and demodulation between two synchronized transceivers. System uses off-the-shelf components. It may be used with digital data, command signals, delta-modulated voice signals, digital television signals, or other data converted to digital form.

B77-10163
HIGH SPEED DAC
J. DURDEN (Motorola, Inc.)
Sep. 1977

NPO-13805 Vol. 2, No. 2, p. 191
Innovation provides effective means of converting digitally-modulated data source of 64 analog levels.

B77-10164
MULTIPLEXED FIBER-OPTIC TRANSMISSION SYSTEM
C. H. BELL
Sep. 1977

KSC-11047 Vol. 2, No. 2, p. 193
Digital, audio, and video data channels spanning 100 megahertz bandwidth are transmitted via single fiber-optical link. System is flexible by virtue of its plug-in modularity and optical patchboard that allows it to adjust to data and bandwidth changes.

B77-10165
ADVANCED GENERAL-PURPOSE COMPUTER
W. A. CLAPP (RCA), A. F. CORNISH (RCA), R. B. GORDON (RCA), T. J. LOMBARDI (RCA), A. S. MERRIAM (RCA), C. L. SAXE (RCA), A. M. SMITH (RCA), C. STRASBERG (RCA), and D. R. TRYON (RCA)
Sep. 1977

M-FS-23531 Vol. 2, No. 2, p. 195
Computer uses custom-designed complementary metal-oxide semiconductor/silicon-on-sapphire LSI arrays with critical computer paths packages on thick-film hybrids.

B77-10261
'PRINTED-CIRCUIT' RECTENNA
R. M. DICKINSON
Nov. 1977

NPO-13886 Vol. 2, No. 2, p. 323
Rectifying antenna is less bulky structure for absorbing transmitted microwave power and converting it into electrical current. Printed-circuit approach, using microstrip technology and circularly polarized antenna, makes polarization orientation unimportant and allows much smaller arrays for given performance. Innovation is particularly useful with proposed electric vehicles powered by beam microwaves.

B77-10262
CHANGING SUNLIGHT TO MICROWAVES: A CONCEPT
R. M. DICKINSON
Nov. 1977

NPO-14068 Vol. 2, No. 2, p. 324
Electromechanical device converts sunlight into microwave energy by direct process. Still in conceptual stage, device is expected to be lighter and more efficient (ninety percent conversion efficiency) than less-direct conversion systems that employ solar panels and magnetrons. Besides uses in satellites and spacecraft as microwave source, device has many terrestrial applications, including use in fuel-saving sun-powered microwave oven.

02 ELECTRONIC SYSTEMS

B77-10263

EMERGENCY-VEHICLE VHF ANTENNA

R. E. ANDERSON (GE), A. W. CARLSON (GE), and J. LEWIS (GE)

Nov. 1977

M-FS-23638

Vol. 2, No. 2, p. 325

Helical VHF antenna mounts on roof of moving vehicle to communicate with distant stations via earth satellites. Antenna requires no pointing and can provide two-way communication while vehicle moves at high speed. Device has proved extremely successful in electrocardiogram transmission tests between medical services vehicle and hospital emergency room.

B77-10264

SATELLITE-BASED INTERFERENCE ANALYZER

H. VARICE, K. JOHANNSEN (Hughes Aircraft Corp.), and S. SABAROFF (Hughes Aircraft Corp.)

Nov. 1977

GSFC-12150

Vol. 2, No. 2, p. 326

System identifies terrestrial sources of radiofrequency interference and measures their frequency spectra and amplitudes. Designed to protect satellite communication networks, system measures entire noise spectrum over selected frequency band and can raster-scan geographical region to locate noise sources. Once interference is analyzed, realistic interference protection ratios are determined and mathematical models for predicting ratio-frequency noise spectra are established. This enhances signal-detection and locates optimum geographical positions and frequency bands for communication equipment.

B77-10265

INKJET COLOR-PRINTER CONTROL INTERFACE

R. KISTLER (Env. Res. Inst. of Michigan), F. J. KRIEGLER (Env. Res. Inst. of Michigan), and R. E. MARSHALL (Env. Res. Inst. of Michigan)

Nov. 1977

LANGLEY-12103

Vol. 2, No. 2, p. 327

Special purpose interface permits computer-driven control of inkjet printers. Inkjet printers are answer to problem of high-speed peripheral output devices for computer systems. Control interface was developed to provide high-resolution color-classification maps quickly and economically from multispectral data.

B77-10266

MEASUREMENT OF BIT-ERROR RATE

J. FOWLER, H. S. KOBAYASHI, and W. KURPLE (Lockheed Electronics Co.)

Nov. 1977

MSC-12743

Vol. 2, No. 2, p. 328

Error rate of RF digital communication link is measured at low signal-to-noise ratios using this technique. In this method, identical pseudo-random sequences of pulses are generated at transmitter and receiver of link. However, comparison of two sequences at receiver involves integration that makes bit-tracking threshold depend on length of pseudo-random sequence, rather than on actual rate of transmission of individual bits.

B77-10267

MULTILINE RADAR SCAN

S. LEVINSON (United Aircraft Corp.)

Nov. 1977

M-FS-23252

Vol. 2, No. 2, p. 330

Scanning scheme is more efficient than conventional scanning. Originally designed for optical radar in space vehicles, scheme may also find uses in site-surveillance security systems and in other industrial applications. It should be particularly useful when system must run on battery energy, as would be case in power outages.

B77-10268

CHANGING NRZ DATA TO BIPHASE LOGIC

E. B. BAKER (Singer Co.), K. G. HARF (Singer Co.), and W. L. MCHENRY (Singer Co.)

Nov. 1977

MSC-16688

Vol. 2, No. 3, p. 331

Simple arrangement of four integrated circuits changes stream of binary data from non-return-to-zero (NRZ) coding to biphasic logic coding. Selection of wiring and integrated circuits enables control and balancing of propagation delay without requiring excessive and expensive hardware.

B77-10356

AUTONOMOUS RENDEZVOUS AND FEATURE DETECTION SYSTEM USING TV IMAGERY

R. B. RICE, JR. (Martin Marietta Corp.)

Mar. 1977

LANGLEY-12050

Vol. 2, No. 4, p. 451

Algorithms and equations are used for conversion of standard television imaging system information into directly usable spatial and dimensional information. System allows utilization of spacecraft imagery system as sensor in application to operations such as deriving spacecraft steering signal, tracking, autonomous rendezvous and docking and ranging.

B77-10357

FOUR-QUADRANT PHASE DETECTOR

E. A. MANUS (Virginia Polytech. Inst. and State Univ.) and H. P. WILEY (Virginia Polytech. Inst. and State Univ.)

Mar. 1977

GSFC-12179

Vol. 2, No. 4, p. 452

Phase detection circuit functions over full 360 degrees covering all four quadrants, and gives linear output that is proportional to phase difference. In addition, its output has single polarity; thus it is compatible with logic circuitry without need for additional processing.

B77-10358

FAST, ACCURATE RANGEFINDER

A. R. JOHNSTON

Mar. 1977

NPO-13460

Vol. 2, No. 4, p. 453

Computer-controlled optical ranging system detects objects as close as 1m and as distant as 30m. Originally developed for robot planetary-surface exploration, system is applicable to vehicular obstacle avoidance, surveying, remote manipulator operation, and other applications.

B77-10359

RECORDING-TAPE LIGHTNING DETECTOR

S. LIVERMORE

Mar. 1977

KSC-11057

Vol. 2, No. 4, p. 454

Prerecorded magnetic tape monitors lightning strikes and records their peak current. It requires no external equipment, power, or human operator attention.

B77-10360

IMPROVING FM TRANSMITTER POWER AND EFFICIENCY

M. A. HONNELL (Auburn Univ.)

Mar. 1977

M-FS-23517

Vol. 2, No. 4, p. 455

Amplifier tracks oscillator frequency allowing narrow band high Q circuit to be used, increasing wide deviation FM transmission efficiency and power output, and suppressing spurious output frequencies system. Tracking oscillator and amplifier act like wideband circuitry with narrow-band advantages.

B77-10361

ACQUISITION AND CRUISE SENSING FOR ATTITUDE CONTROL

G. D. PACE, JR. and L. F. SCHMIDT

Mar. 1977 See also B72-10080

NPO-13722

Vol. 2, No. 4, p. 456

Modified wideangle analog cruise sun sensor coupled with changes in optic attitude correction capabilities, eliminate need of acquisition and sun gate sensors, making on-course navigation of spacecraft flying interplanetary missions less risky and costly. Operational characteristics potentially make system applicable to guidance and control of solar energy collection systems.

B77-10362**RATE-OF-CHANGE LIMITER FOR QUANTIZED SIGNALS**

G. C. STREUDING (Lockheed Electronics Co.)

Mar. 1977

M-FS-16406

Vol. 2, No. 4, p. 457

Analog circuit is employed to smooth change between levels of quantized voltage signal without adversely affecting its fidelity. Circuit is applicable to units requiring interface between digital and analog systems such as automated manufacturing systems or industrial robots.

B77-10363**EFFICIENT BIT-ERROR DETECTING CODE**

R. W. HOCKENBERGER (IBM)

Mar. 1977

KSC-11039

Vol. 2, No. 4, p. 458

Two highly reliable codes termed 'Modified b-adjacent interleaving codes' provide fail-safe operation of launch processing and control system in which common memory is coordination point for interconnection of up to 64 minicomputers. Codes detect and correct bit errors in computer data transmission.

03 PHYSICAL SCIENCES**B77-10035****HIGH-PERFORMANCE FLAT-PLATE SOLAR COLLECTOR**

R. K. REYNOLDS (Kentron-Hawaii, Ltd.) and G. McDONALD

Jun. 1977

NPO-13883

Vol. 2, No. 1, p. 43

Concentric glass-tube-envelope device surrounds flat-plate absorber having spectrally selective coating. Transparent envelope has antireflection coating. Heat-transfer medium is gas that circulates along hairpin path.

B77-10036**AIR/SALT/GRAVITY-FLOW SOLAR HEATING**

R. N. JENSEN

Jun. 1977

LANGLEY-12009

Vol. 2, No. 1, p. 44

Low-cost, easy-to-maintain system uses air collectors, molten-salt energy storage, and gravity flow. System is applicable to residential, commercial, industrial, and agricultural structures.

B77-10037**SOLAR RADIATION SHADOW DETECTOR**

R. A. CAMPBELL

Jun. 1977

M-FS-23546

Vol. 2, No. 1, p. 45

Portable shadow-surveying instrument is quickly and easily assembled at proposed collector site and requires relatively unskilled operator. Technique determines amount of annual shadow at location.

B77-10038**TOWER-SUPPORTED SOLAR-ENERGY COLLECTOR**

M. K. SELCUK

Jun. 1977

NPO-13810

Vol. 2, No. 1, p. 46

Multiple-collector tower system supports three receiver/concentrators that absorb solar energy reflected from surrounding field of heliostats. System overcomes disadvantages of tower-supported collectors. Booms can be lowered during heavy winds to protect arms and collectors.

B77-10039**NOISE ADDING RADIOMETER IMPROVEMENT**

R. A. GARDNER and C. T. STELZRIED

Jun. 1977

NPO-13108

Vol. 2, No. 1, p. 48

Simple computer software modification compensates for

nonideal detector characteristics to provide improved system performance.

B77-10040**NULL-BALANCING MICROWAVE RADIOMETER**

W. N. HARDY (Rockwell Intern. Corp.), A. W. LOVE (Rockwell Intern. Corp.), and A. C. JONES (Rockwell Intern. Corp.)

Jun. 1977 See also NASA-CR-1960 (N72-17271); NASA-CR-2458 (N75-13496)

LANGLEY-11130

Vol. 2, No. 1, p. 49

Device performs absolute temperature measurements over range of 0 to 300 degrees Kelvin. Stability of device approaches 0.1 degrees Kelvin. Potential uses include detecting oil slicks on water and determining cloud water content and water vapor content of atmosphere.

B77-10041**OPTICAL PROXIMITY DETECTOR**

W. A. HERMANN and A. R. JOHNSTON

Jun. 1977

NPO-13306

Vol. 2, No. 1, p. 50

Sensitive, relatively inexpensive instrument uses phase-detection techniques to sense presence of objects. Phase-sensitive detectors, LED, photodiode with response matched to LED output, and filtering lens allow detector to operate over narrow radiation band, giving selectivity over stray light.

B77-10042**LARGE-AREA SOFT X-RAY IMAGING SYSTEM**

P. GORENSTEIN (Smithsonian Astrophys. Obs.), H. GURSKY (Smithsonian Astrophys. Obs.), F. R. HARNDEN, JR. (Smithsonian Astrophys. Obs.), P. BJORKHOLM (Am. Sci. and Eng., Inc.), and A. DECAPRIO (Am. Sci. and Eng., Inc.)

Jun. 1977

GSFC-12093

Vol. 2, No. 1, p. 51

System consists of large-area focusing collector and position sensitive proportional counter. Device can be used to study plasmas, with X-ray imaging in biological sciences, and crystallography.

B77-10043**PORTABLE MASS SPECTROMETER**

C. E. GIFFIN and L. M. SIERADSKI

Jun. 1977

NPO-13664

Vol. 2, No. 1, p. 53

Eighteen-pound unit gives real-time onsite sample analysis. Mass range is twelve to two hundred atomic mass units with resolution of two hundred. Device has biomedical application possibilities, such as determination of alcohol and gas content of blood and breath.

B77-10044**REMOTE SURFACE-HEIGHT MEASUREMENT**

A. JAIN

Jun. 1977

NPO-13862

Vol. 2, No. 1, p. 54

Radar-generated images are unaffected by weather conditions, cloud coverage, or solar illumination. Technique can be adapted to measure vegetation size, urban development, and geological roughness.

B77-10045**SUBSURFACE 'RADAR' CAMERA**

A. JAIN

Jun. 1977

NPO-13864

Vol. 2, No. 1, p. 55

Long-wave length multiple-frequency radar is used for imaging and determining depth of subsurface stratified layers. Very-low frequency radar signals pinpoint below-ground strata via direct imagery techniques. Variation of frequency and scanning angle adjusts image depth and width.

B77-10046**ACOUSTIC IMAGING SYSTEM**

J. M. KENDALL, JR.

Jun. 1977

03 PHYSICAL SCIENCES

NPO-13888

Vol. 2, No. 1, p. 58

Tool detects noise sources by scanning sound 'scene' and displaying relative location of noise-producing elements in area. System consists of ellipsoidal acoustic mirror and microphone and a display device.

B77-10047

NUCLEAR-PUMPED GAS LASERS

F. AOHL, N. W. JALUFKA, M. D. WILLIAMS, and R. J. DEYOUNG (Vanderbilt Univ.)

Jun. 1977

LANGLEY-12131

Vol. 2, No. 1, p. 57

Laser pumping incorporates use of volumetric helium isotope reaction. Reaction deposits energy nearly uniformly throughout laser volume. Method improves efficiency of system as compared with conventional coating method.

B77-10048

BURST SIMULATOR FOR LASER-DOPPLER VELOCIMETER

O. YOUNGBLUTH, JR.

Jun. 1977

LANGLEY-11859

Vol. 2, No. 1, p. 59

Device allows for precheck of velocimeter electronics. Device uses voltage-controlled oscillators to generate fundamental frequency and pedestal frequency independently. Magnitude of each signal is adjustable. System allows variable asymmetry in burst signal to point of producing 'double-pulse burst.'

B77-10049

ELECTRICALLY-CONTROLLED VARIABLE-COLOR OPTICAL FILTERS

A. MILLER (RCA)

Jun. 1977

MSC-14944

Vol. 2, No. 1, p. 59

Optical transmission characteristics of birefringent element are changed by applying voltage to plate. Filters are used on sequential-color television cameras and in color displays. Filters are more convenient and less costly than mechanical color wheels and crystal-based filters.

B77-10050

FIELD-OF-VIEW DIVIDER

V. ITALIANO (Singer Co.) and R. E. KLEMM (Singer Co.)

Jun. 1977

MSC-16106

Vol. 2, No. 1, p. 60

Relatively-inexpensive mirror system splits output scene of single optical probe into three separate parts. System entirely eliminates point-by-point replication, alinement, and registration of multiple-model board assemblies.

B77-10051

LASER-EXCITED GAS-COMPONENT IDENTIFIER

R. V. JENKINS

Jun. 1977

LANGLEY-12035

Vol. 2, No. 1, p. 62

Portable, continuous-sampling device identifies and quantifies gas components by measuring absorption of laser energy.

B77-10052

MULTIPLE-LASER-ENERGY DETECTION SYSTEM

O. JARRETT, JR. and G. B. NORTHAM

Jun. 1977

LANGLEY-12017

Vol. 2, No. 1, p. 63

Technique monitors energy output of each of four sequentially-pulsed dye lasers for the Airborne LIDAR Oceanographic Probing Experiment system. Fiber optics attached to output mirrors transmit optical signal proportional to output energy.

B77-10053

ISOTHERMAL OPTICAL SYSTEM

F. E. GOODWIN (Hughes Aircraft Co.)

Jun. 1977

GSFC-12059

Vol. 2, No. 1, p. 64

Beryllium mirrors and structural mount reduce thermal stresses and misalignment.

B77-10054

BEAM-SPLITTER FOR INFRARED DETECTION OF POLLUTANTS

W. A. MASSEY (TRW, Inc.)

Jun. 1977

LANGLEY-12073

Vol. 2, No. 1, p. 65

Germanium optical elements at proper tilt angles minimize effects of polarization and radiance variations of background scene. Energy-division ratio is less dependent on angle of incidence of entrance beam.

B77-10055

ROTATING-VECTOR TV CURSOR

L. A. FREEDMAN (RCA) and M. KRAVITZ (RCA)

Jun. 1977

MSC-16119

Vol. 2, No. 1, p. 66

Device is used as wiping signal to cover adjustable 360 degree arc of television raster. Device can also be used to generate television alinement reference to assist remotely-controlled payload operations.

B77-10056

CLOSED-CYCLE REFRIGERATOR FOR MASERS

E. R. WIEBE

Jun. 1977

NPO-13839

Vol. 2, No. 1, p. 67

Reducing maser temperature from 4.5 to 3.0 degrees Kelvin increases gain from 45 to 72 decibels.

B77-10057

LIQUID-HYDROGEN BOILOFF RELIQUIFIER

F. S. HOWARD

Jun. 1977

KSC-11021

Vol. 2, No. 1, p. 68

Device uses Joule-Thomson expansion and pressure-relief cooling of compressed and cooled boilloff hydrogen to condense portion of gas. System could be used with cryogenics such as helium, nitrogen, and oxygen.

B77-10058

SIMPLIFIED SENSING FOR CLOUD CHAMBER

A. J. ESKOVITZ (TRW, Inc.) and A. G. PALLAI (TRW, Inc.)

Jun. 1977 See also NASA-CR-128899 (N73-22210)

MSC-14708

Vol. 2, No. 1, p. 69

Electromagnetic delay simplifies electronics for sensing particle-trajectory data. Lumped-element delay line is used.

B77-10059

DIFFERENTIAL MULTI-MOSFET NUCLEAR RADIATION SENSOR

W. A. DEOLIVEIRA

Jun. 1977

MSC-14444

Vol. 2, No. 1, p. 70

Circuit allows minimization of thermal-drift errors, low power consumption, operation over wide dynamic range, improved sensitivity and stability with metaloxide-semiconductor field-effect transistor sensors.

B77-10060

SPECTRALLY-BALANCED CHROMATIC APPROACH-LIGHTING SYSTEM

W. D. CHASE

Jun. 1977

ARC-10990

Vol. 2, No. 1, p. 71

Approach lighting system employing combinations of red and blue lights reduces problem of color-based optical illusions. System exploits inherent chromatic aberration of eye to create three-dimensional effect, giving pilot visual clues of position.

B77-10061

HYBRID OPTICAL/DIGITAL DETECTOR

R. G. SHACKELFORD (Georgia Inst. of Tech.) and J. R. WALSH,

JR. (Georgia Inst. of Tech.)

Jun. 1977

M-FS-23439

Vol. 2, No. 1, p. 72

Device for automatic-diffraction pattern recognition is

designed around concentric-ring fiber-optic array. Coherent light passes through film-image transparency and lens producing Fourier transform of image. Transform is converted to digital data, the basis of diffraction-pattern recognition program performed by computer.

B77-10062**FRESNEL-LENS SOLAR-ENERGY CONCENTRATOR**

S. L. ALLUMS, L. J. HASTINGS, and R. M. COSBY (Ball State Univ.)

Jun. 1977

M-FS-23575

Vol. 2, No. 1, p. 73

Theoretical and experimental evaluations have produced lens and concentrator data that improve collector performance. Methodology is useful to designers of Fresnel-lens solar concentrators.

B77-10063**EFFECTS OF OSCILLATING MAGNETIC FIELDS ON LIQUIDS**

R. I. MILLER (Boeing Aerospace Co.)

Jun. 1977

M-FS-15235

Vol. 2, No. 1, p. 74

Gravity induced convection is inhibited in molten crystals by application of oscillating magnetic fields.

B77-10064**STRAY OPTICAL-RADIATION SUPPRESSION**

R. P. BREAU (Arizona Univ.), B. B. FANNIN (Arizona Univ.), and D. B. GRINER (Arizona Univ.)

Jun. 1977

M-FS-23495

Vol. 2, No. 1, p. 74

Report describes five computer programs for study of scattered radiation.

B77-10065**RADIATION SHIELDING METHODS**

H. S. DAVIS and T. M. JORDAN

Jun. 1977

NPO-13923

Vol. 2, No. 1, p. 75

System aids in charged-particle radiation transport analysis and shielding design. System can be adapted for shielding design and analysis in any charged-particle radiation environment.

B77-10066**FOUR-D GLOBAL REFERENCE ATMOSPHERE**

B. ROBERTSON, O. E. SMITH, C. G. JUSTUS (Georgia Inst. of Tech.), R. G. ROPER (Georgia Inst. of Tech.), and A. W. WOODRUM (Georgia Inst. of Tech.)

Jun. 1977

M-FS-23336

Vol. 2, No. 1, p. 76

Model generates values for pressure, density, temperature, and winds from surface level to orbital altitudes. Program can define altitude profiles of atmospheric parameters for simulated trajectory.

B77-10166**LOW-TEMPERATURE COAL DESULFURIZATION**

P. S. GANGULI, G. R. GAVALAS, G. C. HSU, and S. H. KALFAYAN

Sep. 1977

NPO-13937

Vol. 2, No. 2, p. 199

Economical, low-temperature chlorinolysis converts sulfur to water-soluble sulfates. Sulfates are removed by washing. Subsequent steps dry coal and remove chlorine. Chlorine and solvents can be reused.

B77-10167**CARBON-CHLORINE-CARBON SEWAGE TREATMENT**

R. H. GREEN, R. G. HOWLAND, and C. J. WALLACE

Sep. 1977 See also B76-10516

NPO-13972

Vol. 2, No. 2, p. 200

Activated-carbon treatment following chlorination reduces concentration of potentially-dangerous chlorine derivatives.

B77-10168**DENSITY MEASUREMENTS OF TRACE GASES**

J. DIMEFF

Sep. 1977

ARC-10760

Vol. 2, No. 2, p. 201

Nondispersive infrared absorption analyzer measures radiation absorption of specific gases. Apparatus uses feedback nulling to measure weak signals.

B77-10169**RADIOACTIVE-GAS SEPARATION TECHNIQUE**

R. HANEY, K. J. KING, D. O. NELLIS, R. S. NISSON, P. ROBLING, and W. WOMACK

Sep. 1977

GSFC-12019

Vol. 2, No. 2, p. 202

Cryogenic technique recovers gases inexpensively. Method uses differences in vapor pressures, melting points, and boiling points of components in gaseous mixture. Series of temperature and pressure variations converts gases independently to solid and liquid states, thereby simplifying separation. Apparatus uses readily available cryogen and does not require expensive refrigeration equipment.

B77-10170**MASS SPECTROMETER HAS WIDE ANGULAR ACCEPTANCE**

M. M. NEUGEBAUER

Sep. 1977

NPO-14111

Vol. 2, No. 2, p. 203

Higher-mass resolution is achieved by replacing conventional mass/velocity spectrometers with system of planar ac-modulated grids. System gives focusing for all angles of incidence. Ac-modulation and detection scheme minimizes sensitivity to light and other types of radiation.

B77-10171**MASS SPECTROMETRY CHEMI-IONIZATION**

J. B. LAUDENSLAGER

Sep. 1977

NPO-13857

Vol. 2, No. 2, p. 204

Intermediate-energy ionization reduces number of fragment species and enhances sensitivity. Structural differences between similar samples are readily distinguished using this technique.

B77-10172**MULTISPECTRAL IMAGE PROCESSOR**

R. E. HASKELL (Oakland Univ.)

Sep. 1977

MSC-16253

Vol. 2, No. 2, p. 206

Correlation clustering of 250,000 pixels are numerically classified in real time according to various image elements. Processor operates upon data supplied by Earth Resources Technology Satellite. Algorithmic signal manipulation is used to provide discrete control of individual image parameters.

B77-10173**MODULAR TEST SYSTEM FOR SOLAR COLLECTORS**

F. J. DOLAN

Sep. 1977 See also NASA-TM-X-73355 (N77-15489)

M-FS-23701

Vol. 2, No. 2, p. 207

Portable, recirculating-water-flow, and temperature-control device is used with solar simulator and actual sunlight to test and evaluate several solar-collector panel coatings, panel designs, and scaled-down collector subsystems. System can be pressurized to prevent boiling and allows operation above 100 degrees Centigrade.

B77-10174**ELECTROMAGNETIC POWER ABSORBER**

R. IWASAKI

Sep. 1977

NPO-13830

Vol. 2, No. 2, p. 208

Device has reflection coefficient of order of few tenths of percent and is designed to maintain isothermal temperature distribution in high-power microwave and laser applications. Rigid tile functions over broad temperature range and serves as blackbody radiometric standard. Tile modules allow assembly of compact and economical custom-design configurations. Epoxy surface of tiles is

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insulated with styrofoam against environmental changes and is not subject to convective heat loss. Technique also prevents moisture accumulation and serves as infrared radiation shield.

B77-10175

HOLLOW-FIBER H₂/O₂ FUEL CELL

J. D. INGHAM and D. D. LAWSON
Sep. 1977

NPO-13732

Vol. 2, No. 2, p. 210

Dual-membrane hollow-fiber electrode increases reliability and lowers costs. Leakage of fuel or oxidizer through fiber does not result in failure; excess product water migrates into electrolyte where it is removed by evaporation or distillation; constant exposure of fiber to electrolyte eliminates problems of drying and consequent failure; reference electrode monitors current collectors and overall cell performance.

B77-10176

ACTIVE-CAVITY RADIOMETER/PYROHELIOMETER

R. C. WILLSON
Sep. 1977

NPO-13819

Vol. 2, No. 2, p. 211

Device, using specular black cavity heater, temperature sensors, and electronics and electrodeposited cavity/thermal impedance structures, can achieve + or - 0.1 percent long-term absolute uncertainty at solar constant level. Dual-cavity configuration helps decrease sensitivity for heat-sink temperature drift.

B77-10177

SOLAR-POWER MOUNTAIN CONCEPT

V. C. CLARKE, JR.
Sep. 1977

NPO-13861

Vol. 2, No. 2, p. 212

Solar collectors on mountainside collect thermal energy for mountaintop powerplant. Sloped arrangement reduces heat-transport problem of level ground-based collector field. Heated air rises without mechanical pumps and buoyancy force supplies pumping power without further cost. Precision tracking requirement of power towers eliminated by butted-together Winston-type concentrator troughs. Low-cost native rock is used for heat storage.

B77-10178

INEXPENSIVE HIGH-TEMPERATURE SOLAR COLLECTOR

J. DORMAN and F. L. LANSING
Sep. 1977

NPO-13879

Vol. 2, No. 2, p. 213

Similar to flat-plate collector, concentrator uses water lenses to achieve temperatures near 200 degrees Centigrade. Lens assembly consists of parallel cylindrical lenses made of glass or plastic shells, reducing manufacturing costs and improving portability.

B77-10179

ALINEMENT TOLERANT SCHLIEREN SYSTEM

W. D. GUNTER, JR.
Sep. 1977

ARC-10971

Vol. 2, No. 2, p. 214

Simplified system allows effective viewing of gas flows with relaxed optical-precision requirements. Conventional optical path is folded at its center.

B77-10180

SUPERCONDUCTING THERMOMETER FOR CRYOGENICS

F. A. WHITE (Rensselaer Polytech. Inst.)
Sep. 1977

LANGLEY-12055

Vol. 2, No. 2, p. 215

Digital electronic device uses superconducting filaments as sensors. Simple solid-state circuitry combined with filaments comprise highly-reliable temperature monitor. Device has ability to track very fast thermal transients and 'on/off' output is adaptable to remote sensing and telemetry.

B77-10181

HIGH-PRESSURE HIGH-TEMPERATURE TRANSDUCER

J. J. VROLYK (Rockwell Intern. Corp.)

Sep. 1977

M-FS-23765

Vol. 2, No. 2, p. 216

Compact instrument has active and reference sides consisting of tubes that elongate in response to increasing interior pressures. Relative displacement of tubes is measured by linear variable differential transformer to determine pressure on active side. Device needs no internal cooling, thus eliminating condensation problem with gases containing saturated steam.

B77-10182

SOLAR-CELL ARRAY DESIGN HANDBOOK

H. S. RAUSCHENBACH (TRW, Inc.)

Sep. 1977 See also NASA-CR-149365 (N77-14193); (N77-14194)

NPO-14106

Vol. 2, No. 2, p. 217

Twelve-chapter two-volume compilation of solar cell design data is written from industrial, university, and governmental sources. Volumes contain tutorial descriptions of analytical methods, solar-cell characteristics, and cell material properties widely used in specifying solar-cell array performance and hardware design, as well as analysis, fabrication, and test methods.

B77-10183

EARTH RESOURCES INTERACTIVE PROCESSING SYSTEM

Innovator not given (IBM) Sep. 1977

MSC-16004

Vol. 2, No. 2, p. 218

System allows for processing and analysis of remotely-sensed Earth resources data. System may be modified for other sensors and allows numerous analysis functions on various types of image data.

B77-10269

OPTICAL SCANNING SYSTEM FOR LASER VELOCIMETER

D. B. RHODES
Nov. 1977

LANGLEY-12143

Vol. 2, No. 3, p. 335

Tests, using towed models of large aircraft with small trailing models through still-air test zone, have been designed to analyze wake vortex phenomena. Analyzing velocity profiles as function of time, information is developed on generation and decay of wake vortex. System is improvement over laser velocimeter (LV) products and is anticipated to have many applications in research and commercial products.

B77-10270

FASTER OPTICAL-SPECTRA RECORDING AND ANALYSIS

R. G. RICHMOND
Nov. 1977

MSC-16729

Vol. 2, No. 3, p. 336

Optical spectra are recorded and rapidly analyzed by system that links multichannel analyzer and desk-top programmable calculator. Cassette-memory storage is provided. System can be programed to automate background subtraction, axis expansion, and other data-analysis techniques and can store several hundred spectra for immediate or delayed analysis and comparisons.

B77-10271

LASER PRODUCES COLOR IMAGES FROM DIGITAL DATA

A. R. SHULMAN
Nov. 1977

GSFC-12198

Vol. 2, No. 3, p. 337

Color recorder uses two lasers to generate three different-colored beams. Modulators vary intensity of each beam according to information stored on magnetic tape. Together, three beams are sufficient to reproduce virtually any colors on photographic film. Tape synchronizes motion of beam-writing carriage with modulation imposed on beams.

B77-10272

DUST-CONTAMINATION MONITOR

C. R. CLAYSMITH (Gen. Dyn. Corp.)
Nov. 1977

M-FS-23702

Vol. 2, No. 3, p. 338

Compact instrument gives instantaneous reading of accumulation of small particles on glass plate. Instrument is sensitive to

particles as small as one hundred microns and should be adaptable to monitoring particulate air pollution or dust levels in semiconductor clean rooms. Dual collimated light sources produce highly monochromatic radiation direct at grazing single angle onto glass plate.

B77-10273
RADIOMETER GIVES TRUE ABSORPTION AND EMISSION COEFFICIENTS

A. L. FYMAT

Nov. 1977

NPO-13677

Vol. 2, No. 3, p. 339

Novel radiometer, unaffected by scattering and polarization, measures true absorption and emission coefficients for arbitrary mixture of gases and polluting particles. It has potential astronomical, meteorological, and environmental applications, such as determination of radiative heat budget, aerosol relative concentration, and morphology of cloud, haze, and fog formations. Data and temperature can be coupled directly to small computer for online calculation of radiation coefficients.

B77-10274
DIFFERENTIAL OPTICAL PROXIMITY DETECTOR

A. R. JOHNSTON, K. SHIMADA, and H. H. TIPPINS, JR.

Nov. 1977

NPO-13939

Vol. 2, No. 3, p. 340

Updated detector can operate under ambient light and uses multiple detectors to locate objects in several different spacial volumes. Sensitivity is approved by scanning field-of-view twice: once with coherent light source turned on and once with background light only. Detector outputs for two cases are amplified and subtracted for each photodiode sensor in array, to eliminate effect of background light.

B77-10275
FAST-RESPONSE CLOUD CHAMBER

G. L. FOGAL (GE)

Nov. 1977

M-FS-23588

Vol. 2, No. 3, p. 342

Wall structure keeps chambers at constant, uniform temperature, yet allows them to be cooled rapidly if necessary. Wall structure, used in fast-response cloud chamber, has surface heater and coolant shell separated by foam insulation. It is lightweight and requires relatively little power.

B77-10276
'SOLAR PONDS'

C. G. MILLER and J. B. STEPHENS

Nov. 1977

NPO-13581

Vol. 2, No. 3, p. 343

Array uses low-cost materials and heavy construction methods to make collection and storage of solar energy economical on large scale required for commercial operation. Series of long trenches are dug side by side over an area large in comparison to heat diffusivity of soil.

B77-10277
WINDOW-MOUNTED AUXILIARY SOLAR HEATER

K. G. ANTHONY and E. P. HERNDON

Nov. 1977

M-FS-23719

Vol. 2, No. 3, p. 344

System uses hot-air collectors, no thermal storage, and fan with thermostat switches. At cost of heating efficiency, unit could be manufactured and sold at price allowing immediate entry to market as auxiliary heating system. Its simplicity allows homeowner installation, and maintenance is minimal.

B77-10278
PORTABLE AEROSOL-PARTICLE COUNTER

F. N. WEBER, JR. (South Alabama Univ.)

Nov. 1977 See also NASA CR-145064 (N76-15438)

LEWIS-12130

Vol. 2, No. 3, p. 346

Device makes real-time, precise measurements of aerosols of small particle size. Measurement combines laser velocimetry and light scattering. Technique offers advantages over currently practiced techniques: by measuring aerosol size in real-time,

measuring size precisely, and having high sensitivity in size range of greatest biological concern.

B77-10279
DOPPLER TECHNIQUES FOR MEASURING FLUID VELOCITIES

W. C. CLIFF

Nov. 1977 See also NASA TM-X-64932 (N75-235130)

M-FS-23289

Vol. 2, No. 3, p. 347

Report gives detailed overview of current laser and acoustic-Doppler techniques and is used as reference for application of technology to measurement of fluid velocities. Report provides background information, gives detailed summary of specific techniques with emphasis on advantages and disadvantages of each, error sources, and appropriateness of each method for particular applications.

B77-10364

LARGE-SCALE FRESNEL LENS SOLAR CONCENTRATOR

S. L. ALLUMS, L. J. HASTINGS, and W. S. JENSEN

Mar. 1977

M-FS-23770

Vol. 2, No. 4, p. 461

Sun tracking solar collector using lightweight inexpensive acrylic lenses to concentrate sun's energy yields efficiency range of 50 percent at average fluid temperature of 125 C to 26 percent at 300 C.

B77-10365

HEAT EXCHANGER FOR SOLAR WATER HEATERS

M. CASH and A. C. KRUPNICK

Mar. 1977

M-FS-23711

Vol. 2, No. 4, p. 462

Proposed efficient double-walled heat exchanger prevents contamination of domestic water supply lines and indicates leakage automatically in solar as well as nonsolar heat sources using water as heat transfer medium.

B77-10366

SIMPLE DEVICE MEASURES SOLAR RADIATION

W. R. HUMPHRIES

Mar. 1977

M-FS-23751

Vol. 2, No. 4, p. 463

Simple inexpensive thermometer, insulated from surroundings by transparent glass or plastic encasement, measures intensities of solar radiation, or radiation from other sources such as furnaces or ovens. Unit can be further modified to accomplish readings from remote locations.

B77-10367

DIRECT-HEATING SOLAR-COLLECTOR DUMP VALVE

T. C. HOWIKMAN (Elcam Inc.)

Mar. 1977

M-FS-23679

Vol. 2, No. 4, p. 464

Five-port ganged valve isolates collector from primary load system pressure and drains collectors, allowing use of direct heating with all its advantages. Valve is opened and closed by same switch that controls pump or by temperature sensor set at 0 C, while providing direct dump option.

B77-10368

'TUBLESS' FLAT-PLATE SOLAR COLLECTOR

B. ZELDIN

Mar. 1977

NPO-13897

Vol. 2, No. 4, p. 465

Solar collector utilizing spray system, effectively removes heat from absorber plates without use of tubing or channeling.

B77-10369

TWO-AXIS MOVABLE CONCENTRATING SOLAR ENERGY COLLECTOR

G. S. PERKINS

Mar. 1977

NPO-13291

Vol. 2, No. 4, p. 466

Proposed solar-tracker collector assembly with boiler in fixed position, allows use of hard line connections, capable of withstanding optimum high temperature fluid flow. System thereby

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eliminates need for flexible or slip connection previously used with solar collector systems.

B77-10370

WIDE-FIELD SCHLIEREN SYSTEM

S. P. PARTHASARATHY

Mar. 1977

NPO-14174

Vol. 2, No. 4, p. 467

System uses diffraction grating and wire grid to replace conventional mirror and knife edge, producing larger photographs at reduced costs for fluid flow applications.

B77-10371

ROTATING OPTICAL COUPLER FOR SIGNAL TRANSMISSION

C. V. IVIE

Mar. 1977

NPO-14066

Vol. 2, No. 4, p. 468

Optical coupler using Dove prism assembly to form stationary image of rotating object, transmits data across rotating interface without sliprings or other mechanical contacts. Device can handle many high-bit-rate data channels.

B77-10372

OPTICAL RETROREFLECTOR

F. WEINDLING (United Aircraft Corp.)

Mar. 1977

M-FS-23282

Vol. 2, No. 4, p. 469

Planar target material reflects incident optical energy back to source, such that retroreflected light intensity is function of angle of incidence only. Retroreflective pattern can be tailored to suit specific requirements such as alignment of distant surface normal to beam of laser light.

B77-10373

ANASTIGMATIC THREE-MIRROR TELESCOPE

D. KORSCH (Sperry Rand Corp.)

Mar. 1977 See also NASA-TM-X-73326 (N76-29340)

M-FS-23675

Vol. 2, No. 4, p. 470

Proposed three-mirror telescope provides high resolution over flat image field of 1.5 degrees. Telescope also suppresses stray-light without elaborate baffling system, making it well suited for space astronomy and other high performance and low-light level applications.

B77-10374

PROCESS SHARPENS MICROGRAPHIC IMAGES

A. F. EATON (Sundstrand Corp.)

Mar. 1977

MSC-16846

Vol. 2, No. 4, p. 471

Photomicrographs produced by bright field illumination of surface coated with carbon deposited by ion glow discharge, are considerably sharper and reveal more detail than those made without coating or produced by scanning electron microscopy.

B77-10375

TWO PUMPS REDUCE MASER WEIGHT

Innovator not given (Smithsonian Inst. Astrophys. Observ.) Mar. 1977

M-FS-23265

Vol. 2, No. 4, p. 472

Weight and cost of conventional hydrogen maser is reduced significantly by replacing large ion pump with hydrogen sorption pump and miniature ion pump for scavenging hydrogen and residual gases.

B77-10376

PHOTOELECTRON SPECTROSCOPY BY ELECTRON ATTACHMENT

J. M. AJELLO and A. CHUTJIAN

Mar. 1977

NPO-14078

Vol. 2, No. 4, p. 473

Technique detects threshold photoelectrons for atoms and molecules with high resolution, yet requires no electron optics setup.

B77-10377

IMPROVED FUEL CELL

W. F. BELL (United Technologies Corp.) and N. J. MAIO (United Technologies Corp.)

Mar. 1977

M-FS-23797

Vol. 2, No. 4, p. 474

Concept in fuel cell design has two cells, each with its own reactant flow fields bonded into single modular unit. Cells require fewer parts and occupy less space than conventional fuel cells, effecting easier assembly and maintenance.

B77-10378

NEGATIVE DEUTERIUM-ION SOURCE

R. GOLDSTEIN and J. E. GRAF

Mar. 1977

NPO-14113

Vol. 2, No. 4, p. 475

Negative ions are formed by collisions with surfaces having low work function.

B77-10379

LARGE-AREA RADIATION COUNTERS FOR LOW-LEVEL DETECTION

T. A. PARNELL

Mar. 1977

M-FS-23304

Vol. 2, No. 4, p. 476

Technology of multiwire proportional radiation counters is adapted to detection of low-level beta and X ray emitters such as in tracers and leak detection systems.

B77-10380

AIRBORNE ATMOSPHERIC SAMPLING SYSTEM

T. W. NYLAND, P. PERKINS, M. W. TIEFERMANN, and V. GUSTAFSSON (United Air Lines)

Mar. 1977

LEWIS-12949

Vol. 2, No. 4, p. 477

Device installed on commercial 747 airliners and operated during normal passenger service combines sensitive air constituent measuring instruments with modern aircraft avionics and data acquisition equipment to automatically monitor air quality on worldwide basis. System may be modified for use in remote unmanned ground monitoring stations.

B77-10381

HIGH-RESOLUTION X-RAY RECORDING AND PROCESSING

T. L. TEDROW (Martin Marietta Corp.) and A. A. WEATHERS (Martin Marietta Corp.)

Mar. 1977

LANGLEY-11722

Vol. 2, No. 4, p. 478

Two step technique for X ray recording and processing shows detail down to 0.001 inch and resolves density variations to better than 0.2%.

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B77-10067

HIGH-TEMPERATURE GLASS AND GLASS COATINGS

H. E. GOLDSTEIN, V. E. KATVALA, and D. B. LEISER (Stanford Univ.)

Jun. 1977

ARC-11051

Vol. 2, No. 1, p. 79

Reaction-cured glasses resist thermal shock and maintain properties over range of -100 degrees Centigrade to +1,480 degrees Centigrade. Stability makes these excellent materials for high-temperature glassware and tubing or as coatings for porous materials.

B77-10068

IMPROVED INTUMESCENT COATING

P. M. SAWKO and S. R. RICCITIELLO

Jun. 1977 See also B77-10069

ARC-11042 Vol. 2, No. 1, p. 80

Fire-retardant intumescent coating has increased environmental stability and improved insulative characteristics.

B77-10069

HEAT-MODERATING FILLER FOR INTUMESCENT COATINGS

P. M. SAWKO and S. R. RICCIETELLO

Jun. 1977 See also B77-10068

ARC-11043 Vol. 2, No. 1, p. 80

Endothermic fillers improve insulative efficiency without interfering with intumescent properties.

B77-10070

DETERMINING CRITICAL TEMPERATURES AND VOLUMES

R. F. FEDORS

Jun. 1977 See also B77-10071; B77-10072

NPO-13405 Vol. 2, No. 1, p. 81

Technique estimates critical temperature and volume of fluid from chemical composition and structure without additional empirical data. Method can help designers interested in materials for which critical constants are unavailable.

B77-10071

DETERMINING VISCOSITIES OF LIQUIDS

R. F. FEDORS

Jun. 1977 See also B77-10070; B77-10072

NPO-13406 Vol. 2, No. 1, p. 82

Method requires only chemical composition and molecular structure to evaluate viscosity for many liquids. Accuracies of fifteen percent or better are obtained without experimentation.

B77-10072

ESTIMATING MOLAR VOLUME AND EXPANSION

R. F. FEDORS

Jun. 1977 See also B77-10070; B77-10071

NPO-13404 Vol. 2, No. 1, p. 83

Molar volumes and expansion coefficients of polymers are estimated quickly from minimal experimental data.

B77-10073

SOLUBILITY-PARAMETER 'SPECTROSCOPY'

J. D. INGHAM, D. D. LAWSON, and J. MOACANIN

Jun. 1977

NPO-13829 Vol. 2, No. 1, p. 84

Technique for measuring solubility of solids is useful for polymers where heats of vaporization are not well known.

B77-10074

PREDICTING HYDROGEN-STORAGE CAPABILITIES OF METALS

R. F. LANDEL, D. D. LAWSON, and C. G. MILLER

Jun. 1977

NPO-13893 Vol. 2, No. 1, p. 84

Method predicts absorption of hydrogen into metals. Process can aid designers of hydrogen-storage facilities for electric power plants.

B77-10075

POROUS POLY-HEMA BEAD SYNTHESIS

A. REMBAUM, S. P. S. YEN, and W. J. DREYER (Caltech)

Jun. 1977

NPO-13383 Vol. 2, No. 1, p. 85

Low-cost reagent is useful in labeling cells for research and diagnostic purposes.

B77-10076

ESCA MEASUREMENT OF INSULATOR SURFACES

F. J. GRUNTHANER

Jun. 1977

NPO-13772 Vol. 2, No. 1, p. 86

Technique allows precision X-ray photoelectron spectroscopy of insulators as well as improved results with metals and semiconductors.

B77-10077

HUMIDITY-RESISTANT BLACK-NICKEL COATINGS

J. R. LOWERY (Honeywell, Inc.), J. H. LIN, and R. E. PETERSON (Honeywell, Inc.)

Jun. 1977

M-FS-23650

Vol. 2, No. 1, p. 87

Black-nickel coatings for solar collectors are improved by increasing metal hydroxide concentration. Humidity resistance increased while optical properties are essentially unchanged.

B77-10078

IMPROVED PROCESSABILITY OF ADDITION POLYIMIDES

T. L. ST. CLAIR

Jun. 1977

LANGLEY-12054

Vol. 2, No. 1, p. 88

Melting point depression of addition-type polyimides through use of proper amine mixtures improves processability.

B77-10079

EXTRACTION OF TRACE ELEMENTS FROM ORES

M. IKRAMUDDIN (Purdue Univ.) and M. E. LIPSCHUTZ (Purdue Univ.)

Jun. 1977

HQN-10875

Vol. 2, No. 1, p. 89

Trace elements, such as interstitial impurities, can be extracted by low-pressure, relatively low-temperature vaporization from compositions in which they occur.

B77-10080

HYDROGEN EMBRITTLEMENT OF STRUCTURAL ALLOYS

G. MANDEL (Martin Marietta Corp.), J. L. CARPENTER, JR., and W. F. STUHRKE (Martin Marietta Corp.)

Jun. 1977 See also B77-10107; NASA-CR-134962 (N76-25375); NASA-CR-134963 (N76-25577); NASA-CR-134964 (N76-28565)

LEWIS-12767

Vol. 2, No. 1, p. 89

Technology survey reviews information covering three types of hydrogen embrittlement on structural metals and three specific hydrogen effects. Literature from 1962 to 1975 is summarized.

B77-10081

PARALINEAR OXIDATION BEHAVIOR

C. A. BARRETT and A. F. PRESLER

Jun. 1977

LEWIS-12677

Vol. 2, No. 1, p. 90

Program analyzes parilinear oxidation with emphasis on long-time behavior. Program is also used to analyze cyclic oxidation where oxide growth and spalling between heating cycles approximates parilinear behavior.

B77-10184

IMPACT-RESISTANT BORON/ALUMINUM COMPOSITES

D. A. MCDANELS, R. A. SIGNORELLI, I. J. TOTH (TRW, Inc.), and P. MELNYK (TRW, Inc.)

Sep. 1977 See also NASA-CR-134770 (N75-24747); NASA-TM-X-71875 (N76-18236); NASA-TN-D-8204 (N77-1118)

LEWIS-12472

Vol. 2, No. 2, p. 221

Technique involving proper choosing of materials and processing conditions increases impact strength of boron/aluminum composites by as much as factor of 10 to values higher than for titanium alloys.

B77-10185

PREPARATION OF ORGANOSILOXY-MOLYBDENUM MONOMER

G. A. MARANO (Kentucky State Univ.)

Sep. 1977

M-FS-23704

Vol. 2, No. 2, p. 222

Synthetic compound serves as monomer for thermally-stable polymeric coating.

B77-10186

PREPARATION OF ZINC ORTHOTITANATE

D. W. GATES, J. E. GILLIGAN (IIT Res. Inst.), Y. HARADA (IIT Res. Inst.), and W. R. LOGAN (IIT Res. Inst.)

Sep. 1977

04 MATERIALS

M-FS-23345

Vol. 2, No. 2, p. 223

Use of decomposable precursors to enhance zinc oxide-titanium dioxide reaction and rapid fixing results in rapid preparation of zinc orthotitanate powder pigment. Preparation process allows production under less stringent conditions. Elimination of powder grinding results in purer that is less susceptible to color degradation.

B77-10187

THERMOCHEMICAL-PHOTOLYTIC PRODUCTION OF H₂ AND O₂ FROM WATER

N. L. KRASCELLA (United Technologies Corp.)

Sep. 1977

LANGLEY-12118

Vol. 2, No. 2, p. 224

Low-temperature closed-cycle reactions are used to effect decomposition of water through multistep thermochemical process.

B77-10188

NICKEL-COPPER-ZIRCONIUM ALLOY FOR CATALYTIC REACTORS

J. D. WHITTENBERGER

Sep. 1977

LEWIS-12245

Vol. 2, No. 2, p. 225

Catalytic and improved mechanical properties of alloy indicate its potential use as catalyst for reduction of nitrogen oxide from internal combustion engines.

B77-10189

RADIATION-RESISTANT, ELECTRICALLY INSULATING CERMET

W. M. PHILLIPS

Sep. 1977 See also B77-10190; B77-10191

NPO-13120

Vol. 2, No. 2, p. 226

Cermet composed of spheres of high-temperature metal coated with ceramic oxide offers increased strength for seals in thermionic diodes and other high-temperature environments.

B77-10190

OXIDATION-RESISTANT CERMET

W. M. PHILLIPS

Sep. 1977 See also B77-10189; B77-10191

NPO-13666

Vol. 2, No. 2, p. 227

Chromium metal alloys and chromium oxide ceramic are combined to produce cermets with oxidation-resistant properties. Application of cermets includes use in hot corrosive environments requiring strong resistive materials.

B77-10191

STRESS, CORROSION, AND HEAT RESISTANT CERMET

W. M. PHILLIPS

Sep. 1977 See also B77-10189; B77-10190

NPO-13690

Vol. 2, No. 2, p. 228

Combination of refractory metal and ceramic substances forms stable crystalline alloy, exhibiting high resistance to thermal shock and oxidation.

B77-10192

LIQUID-OXYGEN COMPATIBLE, FLAME-RESISTANT COATING

C. W. BRIGHT

Sep. 1977

KSC-11020

Vol. 2, No. 2, p. 229

Polychloroprene rubber composition, using commercially available components, exhibits superior extrusion and durability and is highly flame and corrosion resistant. Material experiences major applications in fields of aeronautics and safety.

B77-10193

SOLUBLE, THERMALLY-STABLE AROMATIC POLYIMIDES

T. L. ST. CLAIR, A. K. ST. CLAIR (Virginia Polytechnic Institute and State Univ.), and E. N. SMITH (Howard Univ.)

Sep. 1977

LANGLEY-12092

Vol. 2, No. 2, p. 230

Solubility of aromatic polyimides in organic solvents is

increased by additions of dianhydride monomers and substituted diamines. Thermal stability of polymers is retained.

B77-10194

A NEW POLYIMIDE LAMINATE RESIN

J. D. W. BARRICK, R. A. JEWELL, and T. L. STCLAIR

Sep. 1977

LANGLEY-12211

Vol. 2, No. 2, p. 231

Addition polyimide for composite materials is based on liquid monomers and has significant advantages over most existing high-temperature resins. Essentially solventless prepreg has improved drape, tack.

B77-10195

PRETREATMENT FOR STRONG ALUMINUM/EPOXY/ALUMINUM BONDS

H. BAHIMAN, C. CLATTERBUCK, and A. FISHER

Sep. 1977

GSFC-12232

Vol. 2, No. 2, p. 232

Epoxy-compatible surface primer system permits room-temperature cure of high-strength aluminum-to-aluminum bonds without using corrosive chromate. System eliminates risk involved in acid systems.

B77-10196

GOLD RECOVERY PROCESS FROM POLYIMIDE FILM

D. W. HOUSTON (Rockwell Intern. Corp.) and G. OKAMOTO (Rockwell Intern. Corp.)

Sep. 1977

MSC-16650

Vol. 2, No. 2, p. 232

Process economically separates gold from goldized polyimide film and other nonmetallic scrap without hazards of conventional processes. Technique uses nitric acid to destroy nonmetallic material, leaving gold intact.

B77-10197

TENSILE VISCOSITIES OF NON-NEWTONIAN FLUIDS

R. F. LANDEL, S. T. J. PENG (Lockheed Aircraft Corp.), and R. T. S. LIN

Sep. 1977

NPO-13973

Vol. 2, No. 2, p. 233

Tubeless siphon technique offers practical viscosity parameter for accurately determining non-Newtonian liquid tensile viscosity.

B77-10198

RESILIENT THERMAL BARRIER FOR HIGH TEMPERATURES

J. A. FRYE (Rockwell Intern. Corp.)

Sep. 1977

MSC-16338

Vol. 2, No. 2, p. 234

Abrasion-resistant thermal barrier, consisting of two layers of woven fabric or braided sleeving with bulk insulation sandwiched between, shows excellent resilience even after compression at temperatures above 980C.

B77-10199

OBTAINING ULTRADRY CRYSTALLINE SOLIDS

A. ATTAR

Sep. 1977

NPO-13618

Vol. 2, No. 2, p. 234

Drying, cryogenic cooling, and redrying with high temperature and vacuum techniques, reduces moisture in crystalline solids to less than 0.01%.

B77-10200

CONTROLLING STRESS-CORROSION CRACKING

D. B. FRANKLIN, H. W. HERRING, T. S. HUMPHRIES, E. C. MCKANNAN, E. E. NELSON, and J. G. WILLIAMSON

Sep. 1977

M-FS-23416

Vol. 2, No. 2, p. 235

Report outlines characteristics of stress corrosion and relative resistance of several alloys to stress-corrosion cracking.

B77-10201

ANODIC GROWTH OF NIOBIUM OXIDE

M. C. DAVIDSON

Sep. 1977

M-FS-23150**Vol. 2, No. 2, p. 235**

Report documents experimental examination of growth kinetics of niobium oxide, using current transient technique.

B77-10202**PROPERTIES OF DOPED CESIUM IODIDE CRYSTALS**

R. SNYDER

Sep. 1977 See also NASA TM-X-64898 (N75-14908)

M-FS-23148**Vol. 2, No. 2, p. 236**

Report documents study of mechanical and thermal properties of sodium and thallium doped cesium iodide crystals.

B77-10280**SIMPLIFIED OZONE DETECTION BY CHEMILUMINESCENCE**

E. J. CONWAY, R. S. ROGOWSKI, and R. R. RICHARDS (Greenville College)

Nov. 1977

LANGLEY-11405**Vol. 2, No. 3, p. 351**

Ozone is detected by film coated with solid, such as rubrene, that reacts with ozone to degree proportional to concentration in sample gas. Gas flow is stopped, and film is heated to produce light (chemiluminescence) in proportion to amount of reacted material on sensor.

B77-10281**TOUGH STRONG IRON ALLOYS FOR CRYOGENIC SERVICE**

J. R. STEPHENS and W. R. WITZKE

Nov. 1977 See also NASA TN-D-8232 (N76-24392); NASA-TN-D-8403 (N77-18249)

LEWIS-12726**Vol. 2, No. 3, p. 352**

Series of alloys with minor additions of reactive metals possesses outstanding strength and toughness at cryogenic temperatures. Effective metal additions include aluminum, niobium, titanium, and vanadium. Strengthening of series is achieved by thermomechanical processing and by precipitate strengthening while maintaining high level of toughness. Possible applications include liquefied natural-gas storage and transmission, structural members in superconducting machinery, and welding rod for other alloys such as nine nickel steels.

B77-10282**FLAME AND ACID RESISTANT POLYIMIDE FIBERS**

R. S. STRINGHAM (Science Applications, Inc.) and M. S. TOY (Science Applications, Inc.)

Nov. 1977

MSC-16074**Vol. 2, No. 3, p. 353**

Economical process improves flame resistance and resistance to acids of polyamide fibers, without modifying colors of mechanical properties. Process improves general safety of garments and other items made from polyamide fibers and makes them suitable for applications requiring exposure to oxygen-rich atmosphere or corrosive acids. Halo-olefins are added to surface of fibers by photoaddition in sealed chamber. Process could be used with films and other forms of polyamide.

B77-10283**CONTROL OF ELECTRO-OSMOTIC FLOW**

W. J. PATTERSON

Nov. 1977 See also NASA TM-X-73311 (N76-26343)

M-FS-23554**Vol. 2, No. 3, p. 354**

Electro-osmotic mobility of glass capillary is sharply reduced by coating of methyl cellulose. Stable protective layer is formed after approximately ten minute exposures to methyl cellulose solution.

B77-10284**ELECTRICALLY-NONLINEAR COMPOSITE MATERIAL**

V. J. MENICHELLI

Nov. 1977

NPO-13858**Vol. 2, No. 3, p. 355**

Low-temperature sinter of semiconductor and polymer resin is useful in manufacture of circuit boards, cables, and electroexplosive devices. Material can absorb large amounts of heat and can withstand repeated exposures to electrostatic discharges with

little deteriorating effects. These characteristics offer significant advantages over high-temperature-sintered, metal-oxide semiconducting materials.

B77-10285**EFFECTS OF HYDROGEN ON IRON/NICKEL/COBALT/ALLOY**

J. A. HARRIS (Pratt and Whitney Aircraft) and J. MUCCI (Pratt and Whitney Aircraft)

Nov. 1977

M-FS-23369**Vol. 2, No. 3, p. 355**

Commercially available alloy, Incoloy 903, is candidate for various high-pressure, high-temperature applications. Recent study of properties in hydrogen and helium atmospheres under extreme environments indicates that alloy can be degraded by gaseous hydrogen, particularly at elevated temperatures. Study also reports that water-vapor added to hydrogen environments causes reductions in low-cycle fatigue life of material.

B77-10286**KINETIC STUDIES OF STRESS-CORROSION CRACKING**

P. J. NORONHA

Nov. 1977 See also NASA TM-X-64923 (N75-21434)

M-FS-23269**Vol. 2, No. 3, p. 356**

Use of time-to-failure curves for stress-corrosion cracking processes may lead to incorrect estimates of structural life, if material is strongly dependent upon prestress levels. Technique characterizes kinetics of crackgrowth rates and intermediate arrest times by load-level changes.

B77-10382**SCREW-EXTRUDED COAL**

P. R. RYASON

Mar. 1977

NPO-13769**Vol. 2, No. 4, p. 481**

Versatile screw-extrusion technique makes coal more combustible and aids in desulfurization.

B77-10383**WHOLE-ROCK URANIUM ANALYSIS BY FISSION-TRACK ACTIVATION**

E. L. HAINES and J. R. WEISS

Mar. 1977

NPO-13483**Vol. 2, No. 4, p. 482**

Method of analysis measures concentration of uranium in rock samples rapidly and nondestructively.

B77-10384**METAL/POLYVINYL PYRIDINE CATALYTIC BEADS**

A. REMBAUM and W. VOLKSEN

Mar. 1977

NPO-13912**Vol. 2, No. 4, p. 483**

Processed microspheres of polyvinyl pyridine (PVP), copolymers of PVP and other monomers are utilized as wide range of catalytic materials for different applications.

B77-10385**HOMOGENEOUS EUTECTIC OF PB-SB**

J. M. WINTER, JR. (Marvalaud, Inc.)

Mar. 1977

M-FS-23766**Vol. 2, No. 4, p. 484**

Dendrite free eutectic mixture of Pb-Sb is expected to be superelastic material that can be used in formation of shaped charge liners for industrial explosive metal-forming processes and other applications.

B77-10386**ULTRASONIC STRENGTH EVALUATION OF FIBER-REINFORCED COMPOSITES**

A. VARY

Mar. 1977 See also NASA-TM-X-73646 (N77-23210)

LEWIS-12769**Vol. 2, No. 4, p. 484**

Ultrasonic method of nondestructive evaluation of fiber reinforced composite structures has sensitivity to detect small distributed inadequacies such as microvoids and microfractures which effect strength and continuity of composite.

04 MATERIALS

B77-10387

FLEXIBLE THERMAL LAMINATE

F. S. DAWN and D. G. SAUERS

Mar. 1977

MSC-12662

Vol. 2, No. 4, p. 486

Lightweight flexible laminate of interwoven conducting and insulating yarns, designed to provide localized controlled heating for propellant tanks on space vehicles, is useful for nonspace applications where weight, bulk, and flexibility are critical concerns.

B77-10388

CONTROLLED-POROSITY COMPOSITE MATERIALS

R. T. BEALL (Lockheed Aircraft Co.) and A. O. KAYS (Lockheed Aircraft Co.)

Mar. 1977

LANGLEY-12115

Vol. 2, No. 4, p. 487

'Fugitive-fiber' process assists in fabrication of wide range of controlled-porosity materials at low cost.

B77-10389

IMPROVED SILICONE-RUBBER-TO-SILICON-RUBBER BONDING

K. TERAMURA (Rockwell Intern. Corp.)

Mar. 1977

MSC-16419

Vol. 2, No. 4, p. 488

Strongest bond of room-temperature-vulcanizing silicon rubber to itself results when freshly-mixed silicon rubber is applied to unprimed lightly-abraded precured silicon rubber surface.

B77-10390

DEBONDING AGENT FOR SILICONE-RUBBER ADHESIVE

J. W. HOLT (Rockwell Intern. Corp.) and K. TERAMURA (Rockwell Intern. Corp.)

Mar. 1977

MSC-16933

Vol. 2, No. 4, p. 489

Commercially-available blend of methylene chloride in saturated trichloro-trifluoroethane is utilized as chemical debonding agent for silicone rubber adhesive bonds, without damaging bonded material.

B77-10391

METALLIC COATING REDUCES THERMAL STRESS

R. D. MORGAN (Rockwell Intern. Corp.)

Mar. 1977

MSC-16814

Vol. 2, No. 4, p. 490

Addition of metallic outer layer deposited by standard plating method, having high thermal conductivity, substantially reduces thermal stress in high-temperature/high-strength materials, preventing structural overloads.

B77-10392

THERMAL-CONTROL COATINGS FOR FABRICS

L. E. JOHNSON (Martin Marietta Corp.)

Mar. 1977

LANGLEY-11756

Vol. 2, No. 4, p. 491

High emissivity spray-painted silicone coating for fabrics retains flexibility over range of 118 deg to 205 C.

B77-10393

SIMPLIFIED SYSTEMATIC PRODUCTION OF GRAPHITE/POLYIMIDE PREPREG

S. E. HARPER, W. E. STOOPS, and M. L. WILSON

Mar. 1977

LANGLEY-12266

Vol. 2, No. 4, p. 491

Systematic method of producing preimpregnated polyimide/graphite material is ideally suited for researchers and small lot producers of composite structures.

B77-10394

AMMONIA-COMPATIBLE ELASTOMERS AND ALLOYS

M. T. BANTRELL (Fairchild Industries Inc.) and D. A. RIETDORF (Fairchild Industries Inc.)

Mar. 1977

MSC-16559

Vol. 2, No. 4, p. 492

Study examines and reports positive findings from suitability tests of metal alloys, Inconel 718 and Ti-6Al-4V and elastomers,

Ethylene propylene terpolymer rubbers, for utilization in storage vessels, fluid lines, and other system components subjected to continuous immersion in liquid anhydrous ammonia.

B77-10395

DETECTION OF HYDROGEN CHLORIDE GAS IN AIR

G. L. GREGORY

Mar. 1978 See also NASA TN-D-8352 (N77-16310)

LANGLEY-12218

Vol. 2, No. 4, p. 492

Launch vehicle effluent (LVE) monitoring is part of NASA's overall tropospheric and stratospheric environmental program. Following nine techniques are evaluated and developed in report: bubbler method, pH measurements, indicator tubes, microcoulometers, modified condensation nuclei counter, dual-isotope absorption, gas-filter correlation, chemiluminescent nitric oxide detection, chemiluminescent luminol-oxidation detection.

B77-10396

MECHANICAL PROPERTIES OF LOW-NICKEL STAINLESS STEEL

J. W. MONTANO

Mar. 1978 See also NASA TM-X-73309 (X68-18883)

M-FS-23543

Vol. 2, No. 4, p. 494

Demand for improved corrosion-resistant steels, coupled with increased emphasis on conserving strategic metals, has led to development of family of stainless steels in which manganese and nitrogen are substituted for portion of usual nickel content. Advantages are approximately-doubled yield strength in annealed condition, better resistance to stress-corrosion cracking, retention of low magnetic permeability even after severe cold working, excellent strength and ductility at cryogenic temperatures, superior resistance to wear and galling, and excellent high-temperature properties.

05 LIFE SCIENCES

B77-10082

SKIN-IMPLANT MULTIWIRE CONNECTOR

L. J. OWENS

Jun. 1977

KSC-11030

Vol. 2, No. 1, p. 93

Construction of device utilizing high-purity carbon is biocompatible as well as hygienic. Design allows for easy connections and disconnections in dark, cleaning and maintenance and less snagging of clothing and other articles by device. Guides and magnetic coupling preclude need for locks, screwing, or latching.

B77-10083

ROTATIONAL JOINT FOR PROSTHETIC LEG

W. C. JONES and L. J. OWENS

Jun. 1977

KSC-11004

Vol. 2, No. 1, p. 94

Device is installed in standard 30 millimeter tubing used for lower leg prosthetics. Unit allows proper rotation (about 3 degrees) of foot relative to the hip, during normal walking or running. Limited rotational movement with restoring force results in a more natural gait.

B77-10084

ISOELECTRIC LEUKOCYTE FOCUSING

E. M. LEISE (Georgetown Univ.)

Jun. 1977

M-FS-23271

Vol. 2, No. 1, p. 95

Modified electrophoretic separation procedure yields 70 to 80 percent visible cells for small-scale immunological and clinical profiling. All reagents and preparations used in separation and characterization procedures are commercially available.

B77-10085

COMPACT PROSTHETIC HAND

W. A. MANN and G. A. WIKER
Jun. 1977

NPO-13908 Vol. 2, No. 1, p. 96
Device combines tilt, wrist-rotation, and grasping mechanisms in single housing. Main body is about 15 centimeters long and 7.5 centimeters wide. Reduced weight and increased flexibility result from redesign and rearrangement of components.

B77-10086
DUAL-PURPOSE LABORATORY CAGE/ANTENNA
B. H. LALANDE (Northrop Corp.)
Jun. 1977

LANGLEY-11587 Vol. 2, No. 1, p. 97
Part of steel cage enclosing laboratory animals is used as an antenna to transmit biotelemetry over short distances. Receiving and signal processing equipment are located above ground potential to avoid transmission-path difficulties.

B77-10087
RECORD-PLAYER 'VOICE' FOR MUTES
S. L. HAMILTON
Jun. 1977

M-FS-21592 Vol. 2, No. 1, p. 97
Unit that reproduces voice saying various words or phrases enables mute person to answer telephone and to carry on limited conversations.

B77-10088
SIMULTANEOUS EKG AND ULTRASONOSCOPE DISPLAY
R. D. LEE
Jun. 1977

ARC-11137 Vol. 2, No. 1, p. 98
Display of two dimensional image of heart and EKG waveform concurrently on same cathode-ray, is achieved by device. Concurrent display allows continuous comparison of dimensional changes in heart and periodicity of EKG waveform.

B77-10089
PERCUTANEOUS AND SKELETAL BIOCARBON IMPLANTS
V. MOONEY (Rancho Los Amigos Hosp.)
Jun. 1977

M-FS-23866 Vol. 2, No. 1, p. 100
Review of carbon implants developed by NASA discussed four different types of implants and subsequent improvements. Improvements could be of specific interest to rehabilitation centers and similar organizations.

B77-10203
VIRUS DETECTION SYSTEM
A. S. FRASER (Organon Diagnostics), H. J. TENOSO (Organon Diagnostics), A. F. WELLS (Organon Diagnostics), and C. B. LINNECKE
Sep. 1977 See also NASA CR-147491 (N76-19782)

MSC-16098 Vol. 2, No. 2, p. 239
Nonpathogenic marker virus, monitored by compact automatic detection system, is used to determine ability of water-reclamation system to reject passage of viruses into potable water.

B77-10204
BACTERIA/VIRUS FILTER MEMBRANE
M. S. LYSAGHT (Amicon Corp.), F. GOODWIN (United Technologies Corp.), and G. ROEBELN (United Technologies Corp.)
Sep. 1977 See also NASA CR-151149 (N77-15643)

MSC-16388 Vol. 2, No. 2, p. 241
Hollow acrylate fiber membrane that filters bacterial and viral organisms can be used with closed-cycle life-support systems for underwater habitations or laboratories. Membrane also has applications in fields of medicine, gnotobiotics, pharmaceutical production, and industries and research facilities that require sterile water. Device eliminates need for strong chemicals or sterilizing agents, thereby reducing costs.

B77-10205
SINGLE-DONOR LEUKOPHORETIC TECHNIQUE
R. N. EBERHARDT (Martin Marietta Corp.)
Sep. 1977 See also NASA CR-147883 (N76-31894)

MSC-16297 Vol. 2, No. 2, p. 241
Leukocyte separation-and-retrieval device utilizes granulocyte and monocyte property of leukoadhesion to glass surfaces as basis of their separation from whole blood. Device is used with single donor technique and has application in biological and chemical processing, veterinary research and clinical care.

B77-10206
ASPIRIN/METIAMIDE REDUCES STOMACH ULCERATION
J. VERNIKOS-DANELIS and P. A. BROWN (San Jose State Univ.)
Sep. 1977

ABC-11038 Vol. 2, No. 2, p. 242
Combination of aspirin and metiamide reduces gastric erosion or ulceration that can occur under stress when aspirin is taken alone.

B77-10207
ULTRASONIC-MAMMOGRAPHY APPARATUS
O. C. BUCHEA and R. E. FRAZER
Sep. 1977

NPO-13935 Vol. 2, No. 2, p. 244
Improved transmitted/tissue/receiver coupling enhances sensitivity of mammography test. Device involves chamber into which organ is inserted or drawn by vacuum.

B77-10208
BIOLOGICAL-ACTIVITY MONITOR
R. E. FRAZER and M. INGRAM
Sep. 1977

NPO-14089 Vol. 2, No. 2, p. 245
Ingested fluorescent precursors are tracked after excretion as fluorescent compounds, to monitor activities ranging from metabolism to migration.

B77-10209
ACQUISITION SYSTEM FOR BIOMEDICAL DATA
S. A. BERGMAN, JR., G. W. HOFFLER, J. T. BAKER (Technol., Inc.), W. G. CROSIER (Technol., Inc.), and J. A. DONALDSON (Technol., Inc.)
Sep. 1977 See also NASA CR-151213 (N77-18725)

MSC-16144 Vol. 2, No. 2, p. 246
Multifunctional biomedical data-acquisition system monitors cardiovascular and pulmonary performance of patient in real time.

B77-10210
DRUG-DOSAGE INDICATOR
W. M. NEUPERT
Sep. 1977

GSFC-12139 Vol. 2, No. 2, p. 247
Simple indicator, easily incorporated into drug container, allows patient to keep track of medication intake. Device can be used with loose tablets or liquids.

B77-10211
COMPACT RELIABLE MULTIAXIS PIVOT
J. D. JOHNSTON and L. KERSTEN (Nebraska Univ.)
Sep. 1977

M-FS-23311 Vol. 2, No. 2, p. 248
Triple-axis pivot-arm wrist developed for wrist joint for remote-manipulator arm allows three degrees of freedom in wrist joint. Device also contains power-chain components sufficient for 15 foot/pound torque. Device could be used with prosthetics.

B77-10287
HEARING-AID TESTER
R. KESSINGER (Martin Marietta Corp.), J. T. POLHEMUS (Martin Marietta Corp.), and J. G. WARING (Martin Marietta Corp.)
Nov. 1977

MSC-14916 Vol. 2, No. 3, p. 359
Hearing aids are automatically checked by circuit that applies half-second test signal every thirty minutes. If hearing-aid output is distorted, too small, or if battery is too low, a warning lamp is activated. Test circuit is incorporated directly into hearing-aid package.

B77-10288**MULTICHANNEL IMPLANTABLE TELEMETRY SYSTEM**

T. B. FRYER, E. P. MCCUTCHEON, H. SANDLER, and W. FREUND (Stanford Univ.)

Nov. 1977

ARC-11079**Vol. 2, No. 3, p. 360**

Multiplexed biotelemetry system for animal research combines several power-saving features. Implantable sensor measures up to eight parameters simultaneously, including blood flow. Microamp transistors, switching circuits, and CMOS technology are used to lower power requirements. However, when blood flow is monitored, these measures are insufficient to reduce power enough for long-term operation from implantable primary battery.

B77-10289**BATTERYLESS IMPLANTED ECHOSONOMETER**

G. K. KOJIMA

Nov. 1977

ARC-11035**Vol. 2, No. 3, p. 361**

Miniature ultrasonic echosonometer implanted within laboratory animals obtains energy from RF power oscillator that is electronically transduced via induction loop to power receiving loop located just under animal's skin. Method of powering device offers significant advantages over those in which battery is part of implanted package.

B77-10290**PROSTHETIC URINARY SPHINCTERS**

C. R. HELMS and H. M. SMYLY

Nov. 1977

M-FS-23717**Vol. 2, No. 3, p. 362**

Five prosthetic units are compared for acceptability in replacing non-functioning urinary sphincters. Proposed devices are proven reliable and require minimal surgery.

B77-10291**COOLING VEST**

J. KOSMO, J. KANE, and J. COVERDALE (ILC Ind., Inc.)

Nov. 1977

MSC-16771**Vol. 2, No. 3, p. 364**

Inexpensive vest of heat-sealable urethane material, when strapped to person's body, presents significant uncomplicated cooling system for environments where heavy accumulation of metabolic heat exists. Garment is applicable to occupations where physical exertion is required under heavy protective clothing.

B77-10292**LONGITUDINALLY-VIBRATING SURGICAL MICROELECTRODE**

C. FELDSTEIN, D. CRAWFORD (Univ. of Southern California), and E. W. KAWABUS (Univ. of Southern California)

Nov. 1977

NPO-13910**Vol. 2, No. 3, p. 364**

Microelectrode attached to cone of loudspeaker imparting longitudinal vibrations, penetrates relatively tough tissue of arterial walls easier and with more precise depth control because dimpling is eliminated. Vibrating microelectrode has been successfully used to make accurate oxygen-content measurements in arterial walls.

B77-10293**REAL-TIME VIDEO DISPLAY FOR ANGIOCARDIOGRAPHIC STUDIES**

H. SANDLER and J. H. C. REIBER (Stanford Univ.)

Nov. 1977

ARC-10985**Vol. 2, No. 3, p. 366**

Automated cardiovascular data gathering system correlates size and shape of left ventricular cavity with blood pressure and flow data, and displays results on TV monitor in real time.

B77-10294**LIQUID-CIRCULATING GARMENT CONTROLS THERMAL BALANCE**

L. H. KUZNETZ

Nov. 1977 See also NASA TM-X-58190 (N77-19756)

MSC-16727**Vol. 2, No. 3, p. 368**

Experimental data and mathematical model of human

thermoregulatory system have been used to investigate use of liquid-circulatory garment (LCG) to control thermal balance. Model proved useful as accurate simulator of such variables as sweat rate, skin temperature, core temperature, and radiative, evaporative, and LCG heat loss.

B77-10397**VERSATILE COMMUNICATIONS TERMINAL**

N. BELASCO, S. L. POOL, and R. L. SINDERSON

Mar. 1978

MSC-16823**Vol. 2, No. 4, p. 497**

Widely-separated parties are linked into efficient communications network by versatile control terminal. Terminal handles voice and data communications via both telephone lines and radio-frequency channels. It includes telephone-to-radio 'patch', telephone autodialer, and other advanced features to provide rapid communications for applications such as emergency medical services (EMS) operations.

B77-10398**MINIATURE DIAPHRAGM VALVE FOR MEDICAL EQUIPMENT**

T. J. STADLER (TRW, Inc.) and J. R. TAYLOR (TRW, Inc.)

Mar. 1978

LANGLEY-11775**Vol. 2, No. 4, p. 498**

Valve assembly keeps nutrient out of moving parts of valve by physically isolating plunger from fluid. Poppet and diaphragm are molded together, and latter is shaped to act as static seal, which remains seated during the operation. As plunger moves, diaphragm also moves to form separate cavity for nutrient and thus isolates it from plunger cavity and latching mechanism.

B77-10399**CALIBRATION FACEPLATE FOR X-RAY IMAGE INTENSIFIERS**

D. RASMUSSEN, J. RIETMAN, and S. MARQUIS (Stanford Univ.)

Mar. 1978 See also B77-10400

ARC-11146**Vol. 2, No. 4, p. 498**

Lead crosshairs embedded in detachable, radiolucent intensifier faceplate offers quantitative measurement for X-ray image intensifier. Faceplate provides x-y reference system external to device being photographed.

B77-10400**ALIGNMENT TOOL FOR X-RAY IMAGE INTENSIFIERS**

D. RASMUSSEN, J. RIETMAN, and S. MARQUIS (Stanford Univ.)

Mar. 1978 See also B77-10399

ARC-11017**Vol. 2, No. 4, p. 499**

Gage consists of upper plate and lower plate connected by aluminum post marked with metric scale. Upper plate is identical to calibration plate except for post flange. Lower plate is made of aluminum and is grooved for x-y coordinates and pattern of concentric rings that aid in recognition and measurement of nonlinearity. X-y coordinates on upper and lower plates match exactly. Gage indicates amount and direction of skew in images.

B77-10401**BIOTELEMETRY SYSTEM FOR AMBULATORY PATIENTS**

T. B. FRYER

Mar. 1978

ARC-11142**Vol. 2, No. 4, p. 500**

Compact transmitter for multichannel telemetry of medical data is carried in patient's belt. Pulse-code modulation (PCM), is used for high-quality signal, and low-power CMOS integrated circuits make miniaturization possible. Transmitter is useful for electro-encephalograms (EEG) and electro-cardiograms (EKG) and other biomedical patient-monitoring situations.

06 MECHANICS

B77-10090**IMPROVING EFFICIENCY OF EXISTING AIR-**

CONDITIONING

H. D. OBLER

Jun. 1977

GSFC-12217

Vol. 2, No. 1, p. 103

Inexpensive duct work changes improves hot-and-cold deck air conditioning units. Energy cost of reheating cooled air can be eliminated by tying all cold air decks to one air-conditioning unit and all hot decks to another. Resultant energy savings are easily possible with two or more units.

B77-10091**ABSORPTION GENERATOR FOR SOLAR-POWERED AIR-CONDITIONER**

D. J. LOWEN (Chrysler Corp.) and J. G. MURRAY (Chrysler Corp.)

Jun. 1977

M-FS-23417

Vol. 2, No. 1, p. 104

Device passes solar-heated water through coils. Hot lithium Bromide/Water solution leaves through central stand-pipe, and water vapor leaves through refrigerant outlet at top. Matching generation temperature to collector efficiency helps cut costs.

B77-10092**REMOVING CO₂ AND MOISTURE FROM AIR**

E. H. TEPPER (United Aircraft Corp.)

Jun. 1977

MSC-14771

Vol. 2, No. 1, p. 105

Foamed-aluminum blocks act as passive heat exchanger to improve efficiency. Improved closed-cycle atmospheric scrubber, level of carbon dioxide, and water vapor are reduced without affecting temperature of airstream. Exchangers draw impurities from air without additional heaters of auxiliary equipment.

B77-10093**TRANSDUCER FOR ULTRASONIC INSPECTION OF POROUS MATERIALS**

G. A. ALERS (Rockwell Intern. Corp.) and R. B. THOMPSON (Rockwell Intern. Corp.)

Jun. 1977

MSC-19871

Vol. 2, No. 1, p. 107

Device has been utilized in nondestructive testing of low-density porous materials (e. g., high temperature surface insulation) for cracks.

B77-10094**DIFFERENTIAL SOUND-LEVEL METER**

A. J. ZUCKERWAR (Old Dominion Univ.)

Jun. 1977

LANGLEY-12106

Vol. 2, No. 1, p. 108

Relative difference between sound-levels at two different microphone sites is measured precisely with circuit that continuously monitors gains of two acoustical channels. Difference between two pilot voltages is utilized in regulating loop to force gain of second channel to track gain of first channel.

B77-10095**LIFE-TEST METHODOLOGY FOR MECHANICAL COMPONENTS**

K. F. DUFRANE (Battelle Mem. Inst.) and D. B. HAMILTON (Battelle Mem. Inst.)

Jun. 1977

M-FS-23082

Vol. 2, No. 1, p. 109

System is based on examining and testing each part of item under evaluation to determine whether aging processes, wear, or other inherent failure modes are likely to limit life to less than that required. Procedure may be applied to many long-life devices where statistical reliability analysis would be impractical.

B77-10096**ACCURATE RF FIELD MONITORING IN SHIELDED ENCLOSURE**

A. P. SCHMIDT (Honeywell, Inc.)

Jun. 1977

MSC-16325

Vol. 2, No. 1, p. 110

Use of two separate sensing antennas averts error due to reading of null caused by resonance.

B77-10097**INFRARED TEMPERATURE MAPS OF EHD LUBRICATION**

D. M. SANBORN (Georgia Inst. of Tech.) and W. O. WINER (Georgia Inst. of Tech.)

Jun. 1977 See also NASA-CR-134882 (N76-10477)

LEWIS-12685

Vol. 2, No. 1, p. 111

Technique uses an infrared detector with two specially selected infrared filters, in separately mapping the contact-surface temperature and average oil-film temperature in an elastohydrodynamic conjunction. Apparatus includes conventional four-ball bearing tester and temperature controlled lubricant system.

B77-10098**OPTICAL INTEGRATED-CIRCUIT TESTER**

E. A. MICKA and R. K. REYNOLDS

Jun. 1977

NPO-13282

Vol. 2, No. 1, p. 112

Computer controlled device can check typical medium scale unit in less than one minute. System scans integrated circuit chip with narrow beam of light while simultaneously scanning reference chip.

B77-10099**PARTICLE IMPACT NOISE DETECTION (PIND) TEST**

W. REILLY (Singer Co.)

Jun. 1977

MSC-16208

Vol. 2, No. 1, p. 113

Technique applies water-soluble ultrasonic couplant to transducer to facilitate acoustical nondestructive test for sealed and semisealed devices.

B77-10100**DYNAMIC CALIBRATION OF FLOWMETER**

R. W. HERR and D. S. VANN

Jun. 1977

LANGLEY-12023

Vol. 2, No. 1, p. 114

Technique for flowmeters has been developed and tested whereby fluid flows through meter at constant velocity while flowmeter is forced to oscillate relative to fluid.

B77-10101**INEXPENSIVE MASS FLOWMETER**

H. S. HARMAN

Jun. 1977

M-FS-23528

Vol. 2, No. 1, p. 115

Device measures drag of body with known drag coefficient to determine flow rate. Drag on target is transferred by cantilevered arm to fully active strain-gage bridge. Given target will be useful with many types of fluids and flow rates.

B77-10102**QUANTITATIVE MEASUREMENT OF THE 'FEEL' OF FABRIC**

V. L. ALLEY, JR. and A. D. MCHATTON

Jun. 1977

LANGLEY-12147

Vol. 2, No. 1, p. 116

Device handle of fabric is a property related to flexibility, pliability, or compressibility. Technique requires extraction of flat circular sample of fabric through convergent nozzle.

B77-10103**LOW-POWER ANEMOMETER**

R. I. GILJE (TRW, Inc.) and W. LEHMAN (TRW, Inc.)

Jun. 1977

LANGLEY-11473

Vol. 2, No. 1, p. 118

Device allows wind speeds to be measured with less power by alternating hot-wire or hot-film heating periods with measurement periods. System includes reference auxiliary circuits to generate V sub ref and ramp voltage (E sub 3) and reference half of bridge circuit. Circuit permits use of several sensing films with common temperature compensation sensor.

B77-10104

USE OF MINIATURE, SINGLE-WIRE, SHEATHED THERMOCOUPLES

G. E. GLAWE, R. HOLANDA, and L. N. KRAUSE
Jun. 1977 See also NASA-TN-D-7671 (N74-23050)

LEWIS-12436

Vol. 2, No. 1, p. 119

Temperature measurement with small thermocouples is improved by device. Each wire is sheathed separately which increases the interelement insulation by factor of 2 1/2. Each wire in its separate sheath can be brought to junction by independent paths.

B77-10105

HYDRAULIC PRESSURE STABILIZATION AND 'POGO' SUPPRESSION

J. R. FENWICK (Rockwell Intern. Corp.) and G. H. KARIGAN (Rockwell Intern. Corp.)

Jun. 1977

M-FS-19287

Vol. 2, No. 1, p. 120

Volume in new cryogenic accumulator is controlled passively and automatically, accumulator level sensor is eliminated, and sensing and control electronics and number of valves are minimized.

B77-10106

SOLAR-POWERED AIR-CONDITIONING

D. C. CLARK and J. ROUSSEAU (Garrett Corp.)
Jun. 1977

M-FS-23276

Vol. 2, No. 1, p. 121

Report focuses on recent study on development of solar-powered residential air conditioners and is based on selected literature through 1975. Its purposes are to characterize thermal and mechanical systems that might be useful in development of Rankine-cycle approach to solar cooling and assessment of a Lithium Bromide/Water absorption cycle system.

B77-10107

NONDESTRUCTIVE EVALUATION

G. MANDEL, J. L. CARPENTER, JR. (Martin Marietta Corp.), and W. F. STUARKE (Martin Marietta Corp.)

Jun. 1977 See also B77-10080; NASA-CR-134962 (N76-25375); NASA-CR-134963 (N76-25577); NASA-CR-134964 (N76-28565)

LEWIS-12766

Vol. 2, No. 1, p. 121

Technological survey summarizes accumulated knowledge of nondestructive-evaluation (NDE) testing methodology application and reliability as it is presented in literature covering time period from 1962 to 1975.

B77-10108

DYNAMIC STABILITY OF MULTILAYER SANDWICH PLATES

M. A. SALAMA and J. C. CHEN
Jun. 1977

NPO-11625

Vol. 2, No. 1, p. 122

Report studies equations for analyzing effects of periodic inplane loads, using contemporary variational principle for dynamics.

B77-10109

FLUID-CONNECTOR SELECTION

W. P. PRASTHOFFER
Jun. 1977

M-FS-23072

Vol. 2, No. 1, p. 122

Usefulness of dynamic programming for systems design is illustrated by study on selection of separable bolted connectors for aerospace applications. Report should be of specific interest to those considering other dynamic programming applications in fields such as construction of refineries, chemical plants, and electronics.

B77-10110

ATMOSPHERIC INTERACTION PLUME

J. T. KELLY (AeroChem Res. Labs., Inc.) and H. S. PERGAMENT (AeroChem Res. Labs., Inc.)
Jun. 1977

LANGLEY-12203

Vol. 2, No. 1, p. 123

Computer program can be used to predict gas dynamic and chemical properties of underexpanded rocket plumes from sea level to altitude above which viscous continuum-flow assumption with distinct shocks is no longer valid.

B77-10111

TRIM CONDITIONS OF MATED VEHICLES

C. M. NOBLES (McDonnell-Douglas Corp.) and R. H. SEALE (McDonnell-Douglas Corp.)

Jun. 1977

MSC-16188

Vol. 2, No. 1, p. 123

Program was designed to generate data from effects of configuration and trajectory on 747/space shuttle vehicle. System could be adapted to any similar vehicle arrangement. For given coupled vehicle configuration, program will define rate-of-climb ceiling, corresponding trim attitude, and 747 surface deflection at any attainable altitude.

B77-10112

MULTIPLE-COMPARTMENT VENTING

L. K. DONEHOO, H. IKAWA (Rockwell Intern. Corp.), L. P. LEBLANC (Rockwell Intern. Corp.), and J. A. SADUNAS (Rockwell Intern. Corp.)

Jun. 1977

M-FS-23681

Vol. 2, No. 1, p. 124

Program simulates venting characteristics of multireservoir multiconductor configurations. Reservoirs may be finite or infinite volume.

B77-10113

STEADY-STATE SUPER/HYPERSONIC INVISCID FLOW

F. MARCONI (Grumman Aerospace Corp.), M. D. SALAS (Grumman Aerospace Corp.), and L. S. YAEGER (Grumman Aerospace Corp.)

Jun. 1977

LANGLEY-11891

Vol. 2, No. 1, p. 124

Package of three programs accurately and efficiently computes inviscid super/hypersonic flow field about complex vehicle geometries.

B77-10114

TRIM-STAB-AEROSPACE VEHICLE TRIM AND STABILITY

R. E. BARNES (Gen. Dyn. Corp.) and B. J. KUCHTA (Gen. Dyn. Corp.)

Jun. 1977

MSC-14927

Vol. 2, No. 1, p. 125

Program calculates stability and control characteristics of aerospace vehicles, which are usually calculated by either constant coefficient time-slice linear analysis or by nonlinear simulation.

B77-10115

THREE-DIMENSIONAL SUPERSONIC VISCOUS FLOWS

J. V. RAKICH
Jun. 1977

ARC-11087

Vol. 2, No. 1, p. 126

Program for design of high speed vehicles determines complete viscous and inviscid flow around body of revolution at given angle of attack when traveling at supersonic speeds.

B77-10116

AIRCRAFT ENGINE WEIGHT AND DIMENSIONS

L. C. FRANCISCUS
Jun. 1977

LEWIS-12741

Vol. 2, No. 1, p. 126

Program estimates engine weights and major dimensions on compartment to compartment basis for any engine with components that can be represented within the program. Data base of program reflects selected high technology engines from supersonic cruise aircraft research studies, some NASA in-house results, and some older military supersonic engines.

B77-10212

IMPROVED ACCURACY WITH PHASE-CHANGE PAINTS

J. D. DRUMMOND
Sep. 1977

LANGLEY-12025 Vol. 2, No. 2, p. 251

Technique, using effective thermophysical property, significantly improves accuracy when phase-change coating methods are used to determine heat transfer rate over surface of small complex models.

B77-10213**FATIGUE-FAILURE LOAD INDICATOR**

D. C. DAVIS, W. T. DAVIS, and L. A. IMIG
Sep. 1977

LANGLEY-12027

Vol. 2, No. 2, p. 251

Device easily and economically records loads at instant of failure.

B77-10214**IMPROVED LOAD-CELL COMPENSATION**

R. L. EGGER (Boeing Co.)
Sep. 1977

MSC-16486

Vol. 2, No. 2, p. 253

Improved bridge-compensation circuit saves considerable time in balancing bridge and wiring it for temperature compensation. Large bridge-balance compensation is made before temperature cycling and small adjustments are made with different type of wire.

B77-10215**DETECTING GAS LEAKS IN PROPELLANT LINES**

W. T. ESCUE (Sperry Rand Corp.), H. K. FEAGLEY (Sperry Rand Corp.), and T. I. SOKOLOWSKI (Sperry Rand Corp.)
Sep. 1977

M-FS-23404

Vol. 2, No. 2, p. 254

Leak detector consisting of inflatable bladder and flow-measurement equipment, localizes leaks and allows determination of leak rates past individual components. Fail-safe system prevents overpressurized bladder.

B77-10216**RECORD DIELECTRIC BREAKDOWN AUTOMATICALLY**

E. T. BATES, JR. and S. P. LI
Sep. 1977

NPO-13599

Vol. 2, No. 2, p. 255

Automatic Monitoring System for time-dependent dielectric breakdown tests ninety-nine metal-oxide semiconductor capacitors simultaneously. Each breakdown generates voltage spike registered on readouts and indicated by LED. Latching circuit prevents recording of possible subsequent breakdowns in same capacitor. In addition to research use, system could also be adapted for quality control.

B77-10217**QUANTITATIVE MEASUREMENT OF SURFACE CONTAMINATION**

R. G. RICHMOND
Sep. 1977

M-FS-16679

Vol. 2, No. 2, p. 256

Portable and highly sensitive system permits quantitative determinations on test surfaces. Device is used in normal room light and permits detection of significantly smaller samples. Digitation of output permits easy evaluation of contamination cleanup techniques.

B77-10218**FUEL BURNER WITH LOW NITROGEN OXIDE FORMATION**

R. A. MCKAY
Sep. 1977

NPO-13958

Vol. 2, No. 2, p. 257

Concentric-tube burner controls combustion temperature to maintain efficiency, while lowering formation of nitrogen oxides.

B77-10219**PROTECTION AGAINST EXPLOSIVE BLASTS**

L. J. BEMENT
Sep. 1977

LANGLEY-12014

Vol. 2, No. 2, p. 258

Simple, hinged cover plate is effective against high explosive blasts. Blast energy under cover is transformed into kinetic energy of plate.

B77-10220**CONTROLLING FIRES IN SILVER/ZINC BATTERIES**

W. A. BOSHERS and W. A. BRITZ
Sep. 1977

M-FS-22952

Vol. 2, No. 2, p. 259

Silver/zinc storage battery fires are often difficult to extinguish. Improved technique employs manifold connected to central evacuation chamber to rapidly vent combustion-supporting gases generated by battery plate oxides.

B77-10221**PRESSURIZATION SYSTEMS**

Innovator not given Sep. 1977 See also NASA SP-8112 (N76-22300)

LEWIS-12845

Vol. 2, No. 2, p. 260

Pressurized systems' development and operation are presented for effective use in design. Article reviews and accesses current design practices to establish guidance to achieve greater consistency in design, product, and greater efficiency in design effort.

B77-10222**ENGINE INJECTORS**

Innovator not given Sep. 1977 See also NASA SP-8089 (N76-30284)

LEWIS-12846

Vol. 2, No. 2, p. 260

Monograph contains information on NASA engine injection development. State of the art, design criteria, and recommended practices are considered.

B77-10223**FLUID-LINE MATH MODEL**

A. KANDELMAN (Rockwell Intern. Corp.) and D. J. NELSON (Rockwell Intern. Corp.)
Sep. 1977

MSC-16230

Vol. 2, No. 2, p. 261

Simplified mathematical model simulates large hydraulic systems on either analog or digital computers. Models of pumps, servoactuators, reservoirs, accumulators, and valves are connected generating systems containing six hundred elements.

B77-10224**MULTISPECTRAL DATA ANALYSIS**

Innovator not given (Texas A and M Univ.) Sep. 1977

MSC-16322

Vol. 2, No. 2, p. 262

LARSYS III.1 program is designed for remote-sensing research and application. Pattern recognition and interaction data handling techniques analyze remotely-sensed multispectral and multitemporal data. Primary inputs are multispectral data in image orientation.

B77-10225**AIRCRAFT AERODYNAMICS AT HIGH ANGLES OF ATTACK**

J. A. AXELSON
Sep. 1977

ARC-11133

Vol. 2, No. 2, p. 262

AEROX program estimates aircraft aerodynamics to high angles of attack (up to sixty degrees). It estimates coefficients of lift, induced drag, and pitching moment for wings and wing body combinations with or without aft horizontal tail. Both trimmed and untrimmed characters are calculated.

B77-10226**CRACK-PROPAGATION PREDICTIONS**

H. P. KAN (Rockwell Intern. Corp.), A. F. LIU (Rockwell Intern. Corp.), and H. L. REED (Rockwell Intern. Corp.)
Sep. 1977

MSC-16436

Vol. 2, No. 2, p. 263

New program, FLAGRO-III, aids predictive analysis of preexisting subcritical flaws or cracks. Fracture mechanics are applied as tool to predict growth of fatigue cracks and to evaluate tolerance of given structural design damage.

B77-10295**MEASURING SOLAR-CELL QUALITY**

06 MECHANICS

O. VON ROOS (United Technical Services)

Nov. 1977

NPO-14100

Vol. 2, No. 3, p. 371

Automatic checking system illuminates solar cells to ensure minority carrier lifetime is at proper value. Testing method promises to make solar cell manufacture more economical, efficient and reliable.

B77-10296

SOLAR CELL MEASUREMENTS IN THE FIELD

R. G. ROSS, JR. (Caltech)

Nov. 1977

NPO-14067

Vol. 2, No. 3, p. 372

Portable test instrument makes rapid current, voltage, and power measurements of photovoltaic solar cell arrays in field as well as in laboratory.

B77-10297

ALLOWABLE BENDING LOADS FOR MECHANICAL FASTENERS

R. D. FERDIE (IBM) and R. J. STEELE (IBM)

Nov. 1977

M-FS-23430

Vol. 2, No. 3, p. 373

Modified shear-loading setup is used to determine allowable shear bending loads on mechanical fasteners. System reduces number of tests required for direct analysis of fasteners to two.

B77-10298

INTERPRETING HONEYCOMB CLIMBING-DRUM PEEL TESTS

R. D. FERDIE (IBM)

Nov. 1977

M-FS-23319

Vol. 2, No. 3, p. 375

Drum-peel tests are made more meaningful by use of approximations to derive analytical expressions relating failures due to bond flatwise tension, inplane tension, and shear, to adhesive weight and method of bond cure.

B77-10299

COMPRESSIBILITY MEASUREMENT OF FLUID-SYSTEM ULLAGE

D. A. DZIENIS (United Technologies Corp.) and E. C. SEE (Rockwell Intern. Corp.)

Nov. 1977

MSC-16640

Vol. 2, No. 3, p. 376

Portable self-contained instrument measures volume of free gas or air trapped in closed fluid systems, such as lubricating-oil lines or hydraulic brakes. In response to measurement readings, operator may use device to accurately add or withdraw fluid to or from system.

B77-10300

INSTRUMENT MEASURES DYNAMIC PRESSURE FLUCTUATIONS

J. W. COATS, P. E. PENKO, and M. RESHOTKO

Nov. 1977 See also NASA TM-X-73587 (N77-17064); NASA TM-X-73535 (N77-11053)

LEWIS-12808

Vol. 2, No. 3, p. 378

Pressure probe instrument, incorporating 'infinite line' principle, can be used to remotely measure dynamic pressure fluctuations in hot high-pressure environments too severe for sensors. System is designed and can be utilized for measurements in core of operating turbofan engine.

B77-10301

RADIOGRAPHIC DETECTION OF CRACKS

F. E. SUGG (Rockwell Intern. Corp.)

Nov. 1977

MSC-16541

Vol. 2, No. 3, p. 380

Procedure utilizing x-ray radiography techniques can detect material cracks as small as 20% of material thickness, with 90% probability and 95% confidence if proper imaging procedures and criteria for selecting qualified inspectors are followed.

B77-10302

COST-EFFECTIVE ACTUATOR TESTER

G. F. KOPP (Honeywell Inc.) and C. E. WYLLIE (Honeywell Inc.)

Nov. 1977

MSC-16324

Vol. 2, No. 3, p. 381

Group of preprogrammed plug-in cards and control module converts breadboard control electronics of actuator assembly to actuator tester. System utilizes electronic control, and hydraulic systems of breadboard actuator into which it is installed.

B77-10303

MULTICHANNEL TEMPERATURE SENSOR

K. A. KADRMAS

Nov. 1977

M-FS-23749

Vol. 2, No. 3, p. 382

Simple inexpensive temperature-to-frequency converter utilizes readily available and inexpensive components to monitor temperature at eight or more locations. Circuit has potential applicability in monitoring and controlling solar energy systems, as well as other data collection and temperature control situations.

B77-10304

IMPROVED RADIANT-HEAT OVEN

L. D. BECKERLE (Rockwell Intern. Corp.) and A. R. REYES (Rockwell Intern. Corp.)

Nov. 1977

MSC-16761

Vol. 2, No. 3, p. 383

Greatly improved oven materially increases lamp life by using a new reflector arrangement. Entire unit uses less power, yet heats test articles to higher temperatures with lower cooling requirements than previous ovens. Improved design offers significant savings in costs and energy.

B77-10305

FIREMAN'S LAMP

W. J. BRITZ and W. W. VARNEDOE, JR.

Nov. 1977

M-FS-23783

Vol. 2, No. 3, p. 384

Rugged lamp used by miners is adapted for firefighters by utilization of smaller, rechargeable 3-hour-life gel-cell battery. Lighter, maintenance free unit can be clipped to outer clothing for convenience. Small monitor circuit indicates need to recharge battery.

B77-10306

ULTRASONIC DETECTION OF BEARING DEFECTS

L. C. ENSOR (ENDEVCO) and C. C. FENG (ENDEVCO)

Nov. 1977 See also NASA-CR-144130 (N76-15462)

M-FS-23446

Vol. 2, No. 3, p. 385

Experimental study shows that various sensors can be used to detect and monitor vibrations and stress waves emitted by defective bearings, giving early warning of impending bearing failure.

B77-10307

ANALYSIS OF AIRCRAFT MOTIONS

R. C. WINGROVE

Nov. 1977

ARC-11132

Vol. 2, No. 3, p. 385

Technique developed for deriving time histories of aircraft motion, forms air-traffic control (ATC) radar records. Technique should prove useful as source of data in investigation of commercial airline accidents and in analysis of accidents involving aircraft that do not have onboard data recorders.

B77-10308

SUBSONIC WIND-TUNNEL PERFORMANCE

W. T. ECKERT, J. JOPE, and K. W. MORT

Nov. 1977

ARC-11138

Vol. 2, No. 3, p. 386

Analysis of conditional sampling averages for turbulent flows shows how conditional averages can be related to conventional averages incorporated into existing flow models. Technique allows vast quantities of data generated by conditional sampling to be analyzed in coherent way.

B77-10309

PARTICLE TRAJECTORIES IN RADIAL-INFLOW TURBINES

W. B. CLEVENGER, JR. (Univ. of Cincinnati) and W. TABAKOFF (Univ. of Cincinnati)
Nov. 1977

LEWIS-12561 Vol. 2, No. 3, p. 386

Package of five computer programs is used to study trajectories of particles in radial-inflow turbines. Programs enable designer to predict areas of turbine that will be most affected by particle ingestion.

B77-10310

DESIGN OF MINIMUM-WEIGHT STRUCTURES

H. MIURA (Univ. of Calif., Los Angeles) and L. A. SCHMIT, JR. (Univ. of Calif., Los Angeles)
Nov. 1977

LANGLEY-12209 Vol. 2, No. 3, p. 387

Finite-element techniques, mathematical programming methods, and innovative collection of approximation techniques are combined in program for finding efficient minimum-weight optimum designs for significant class of structural synthesis problems.

B77-10402

MULTIPURPOSE MINIATURE DRAG-FORCE ANEMOMETER

G. C. FRALICK and L. N. KRAUSE
Mar. 1978 See also NASA TM-X-3507 (N77-25487)

LEWIS-12790 Vol. 2, No. 4, p. 503

Simple, rugged, accurate probe measures steady-state and dynamic flow angle, and turbulence intensity in flowing fluids at subsonic velocity. Probe is simpler in design and calibration, and more durable, than hot-wire and hot-film anemometers and is not affected by flow contamination. It is less expensive and complex than laser anemometers. Associated electronics are as simple as those of strain-gage pressure transducers.

B77-10403

TESTING INTERNAL COATINGS IN METAL VESSELS

A. RUBY (United Technologies Corp.) and P. PERKINS (United Technologies Corp.)
Mar. 1978

MSC-16532 Vol. 2, No. 4, p. 504

Presence of pinholes or defects in nonconductive protective coating on inside surface of closed vessel is detected if vessel has one opening into which small stainless-steel probe can be introduced. By inserting probe and attaching another to outside surface, and by filling vessel with ten percent sodium chloride solution, integrity of coating is determined by measuring electrical conductivity through vessel wall.

B77-10404

PARTICLE-IMPACT NOISE DETECTOR (PIND)

R. J. BARR (IBM), D. E. JACKSON (IBM), W. D. LEAF (IBM), R. G. MEZA (IBM), and G. E. RADER (IBM)
Mar. 1978

MSC-16626 Vol. 2, No. 4, p. 504

Package, in page assembly, is subjected to low-frequency vibration, and noise generated by particle impacts is picked up by transducer. Test procedure calls for three transverse shocks to be applied to page to dislodge any trapped particles.

B77-10405

ABLATIVE LINER LOCATES HOTSPOTS

S. D. MERCER (Aerojet-Gen. Corp.) and T. J. TIERNEY (Aerojet-Gen. Corp.)
Mar. 1978

MSC-16981 Vol. 2, No. 4, p. 505

Ablative liner quantifies local-heating effects in combustion chambers and other applications. By identifying hotspots and helping to map heat-flux patterns, liner is useful tool for research in engine design. Liner permanently records heat flux at each point by depth of ablation due to local heating. Technique determines best locations for thermocouples for more extensive testing.

B77-10406

IMPROVED DEWPOINT-PROBE CALIBRATION

J. G. STEPHENSON (Rockwell Intern. Corp.) and E. A. THEODORE (Rockwell Intern. Corp.)

Mar. 1978

MSC-16811

Vol. 2, No. 4, p. 506

Relatively-simple pressure-control apparatus calibrates dewpoint probes considerably faster than conventional methods, with no loss of accuracy. Technique requires only pressure measurement at each calibration point and single absolute-humidity measurement at beginning of run. Several probes can be calibrated simultaneously and points can be checked above room temperature.

B77-10407

NEUTRON RADIOGRAPHIC TESTING FOR HYDROGEN EMBRITTLEMENT

J. DUNSTAN (Rockwell Intern. Corp.)

Mar. 1978

M-FS-24193

Vol. 2, No. 4, p. 507

Neutron radiography (N-ray) inspection is similar to X-ray inspection in that both depend on variations in attenuation to achieve object contrast. However, effectiveness of methods differs significantly when certain combinations of elements are examined. Mass attenuation coefficient for N-rays is function of both scattering and capture possibilities for each element; thus, density of thickness of material is less important in determining its transparency to neutrons.

B77-10408

APPARATUS FOR DETERMINING SURFACE TENSION

R. E. RAZOUK

Mar. 1978

NPO-13294

Vol. 2, No. 4, p. 508

System for studying capillary action uses pressure transducer and chart recorder instead of manometer. Apparatus enables measurements to be made under controlled atmospheres. It also may be remotely operated. These features are particularly useful when dealing with noxious liquids and for study of surface tension under high-pressure conditions that require use of all-metal apparatus.

B77-10409

LEAK DETECTOR USES ULTRASONICS

R. M. HEISMAN (Rockwell Intern. Corp.), W. F. ICELAND (Rockwell Intern. Corp.), and A. R. KEIR (Rockwell Intern. Corp.)
Mar. 1978

MSC-16803

Vol. 2, No. 4, p. 509

Probe located on outer wall of vacuum-jacketed fluid lines detects leaks on inner wall. Probe picks up and amplifies vibrations that occur when gas rushes through leak and converts them to audible signal or CRT display. System is considerably simpler to use than helium leak detectors and allows rapid checks to be made as part of routine maintenance.

B77-10410

CRYOGENIC LIQUID-LEVEL DETECTOR

J. HAMLET

Mar. 1978 See also NASA-TM-X-64914 (N75-19626)

M-FS-23253

Vol. 2, No. 4, p. 510

Detector is designed for quick assembly, fast response, and good performance under vibratory stress. Its basic parallel-plate open configuration can be adapted to any length and allows its calibration scale factor to be predicted accurately. When compared with discrete level sensors, continuous reading sensor was found to be superior if there is sloshing, boiling, or other disturbance.

B77-10411

MEASURING CRYOGENIC-REFRIGERATOR COOLING CAPACITY

E. R. WIEBE

Mar. 1978

NPO-13435

Vol. 2, No. 4, p. 511

Temperature-sensing bridge determines liquid reserve level in low-temperature heat exchanger. Device should be of interest to manufacturers of cryogenic refrigerators as well as to those who use them in conjunction with operation of electronic equipment like masers or Josephson junctions.

B77-10412**VAPOR-MODULATED HEAT PIPE FOR IMPROVED TEMPERATURE CONTROL**

D. K. EDWARDS (TRW, Inc.), J. E. ENINGER (TRW, Inc.), and E. E. LUDEKE (TRW, Inc.)

Mar. 1978

ARC-11001**Vol. 2, No. 4, p. 512**

Dryout induced by vapor throttling makes control of equipment temperature less dependent on variations in sink environment. Mechanism controls flow of vapor in heat pipe by using valve in return path to build difference in pressure and also difference in saturation temperature of the vapor. In steady state, valve closes just enough to produce partial dryout that achieves required temperature drop.

B77-10413**DEPLOYABLE HEAT-PIPE RADIATOR**

F. EDELSTEIN (Grumman Aerospace Corp.)

Mar. 1978

M-FS-23292**Vol. 2, No. 4, p. 514**

Loop temperatures are controlled effectively under varying load conditions. Radiator has four separate pieces of hardware: heat-pipe panel, flexible heat-pipe leader, heat exchanger, fluid header. Single-fluid transport capacities of about 850 watts, corresponding to 51,000 watt-inches, have been achieved in 90 degree bend orientation of heat-pipe header.

B77-10414**INFLUENCE OF LUBRICANT STARVATION OF MECHANICAL PARTS**

B. J. HAMROCK and D. DOWSON (Leeds Univ.)

Mar. 1978 See also B77-10415; NASA-TN-D-8049 (N75-30565); NASA-TN-D-8318 (N76-33509)

LEWIS-12884**Vol. 2, No. 4, p. 515**

Formula determines effect of lubricant starvation on pressure and film thickness within conjunction of ball bearings, gears, cams, and similar components.

B77-10415**DETERMINING MINIMUM LUBRICATION FILM FOR MACHINE PARTS**

B. J. HAMROCK and D. DOWSON (Leeds Univ.)

Mar. 1978 See also B77-10414; NASA-TN-D-7774 (N74-31951); NASA-TN-D-8049 (N75-30565); NASA-TN-D-8317 (N77-11400)

LEWIS-12885**Vol. 2, No. 4, p. 516**

Formula predicts minimum film thickness required for fully-flooded ball bearings, gears, and cams. Formula is result of study to determine complete theoretical solution of isothermal elasto-hydrodynamic lubrication of fully-flooded elliptical contacts.

B77-10416**QUIET WIND TUNNEL**

P. W. HOWARD and L. A. SCHUTZENHOFER

Mar. 1978

M-FS-23099**Vol. 2, No. 4, p. 517**

Simple and inexpensive technique suppresses background noise generated by pores in wind tunnel wall lining and makes aerodynamic data more accurate and reliable. Porous walls are covered with wire-mesh screen. Screen offers smoother surface to airflow and damps vortices and resonance caused by wall perforations; yet it provides enough open area for perforations to cancel shock waves generated by model.

B77-10417**'EITHER-SIDE-UP' INFLATABLE LIFERAFT**

E. J. SOTER

Mar. 1978

LANGLEY-10241**Vol. 2, No. 4, p. 518**

One-man inflatable liferaft can be thrown into water and boarded regardless of which side falls up. Raft, which incorporates several additional safety and convenience features, is designed for simplicity. It is economical to manufacture and easy to use.

B77-10418**AUTOMATED PREDESIGN OF AIRCRAFT**

C. C. POE, JR., G. S. KRUSE (Gen. Dyn. Corp.), C. J. TANNER (Gen. Dyn. Corp.), and P. J. WILSON (Gen. Dyn. Corp.)

Mar. 1978

LANGLEY-12258**Vol. 2, No. 4, p. 519**

Program uses multistation structural-synthesis to size and design box-beam structures for transport aircraft. Program optimizes static strength and scales up to satisfy fatigue and fracture criteria. It has multimaterial capability and library of materials properties, including advanced composites. Program can be used to evaluate impact on weight of variables such as materials, types of construction, structural configurations, minimum gage limits, applied loads, fatigue lives, crack-growth lives, initial crack sizes, and residual strengths.

B77-10419**THERMAL HYDRAULIC ANALYZER**

T. C. CORE (Rockwell Intern. Corp.), E. E. GARCIA (Rockwell Intern. Corp.), and D. JELINEK

Mar. 1978

MSC-16797**Vol. 2, No. 4, p. 520**

Program solves thermal, hydraulic, or combined thermal and hydraulic problems. It can handle transient and steady-state hydraulic problems and combined thermal/hydraulic transient of steady-state problems. Physical system of interest is approximated to any degree of accuracy with lumped-parameter representation, using elements provided by program.

B77-10420**OPTIMIZING SIMULATED TRAJECTORIES**

G. L. BRAUER (Martin Marietta Corp.), A. R. HABEGER (Martin Marietta Corp.), and R. STEVENSON (Martin Marietta Corp.)

Mar. 1978

LANGLEY-12089**Vol. 2, No. 4, p. 520**

General-purpose rigid-body six-degrees-of-freedom program is used to solve wide variety of atmospheric flight mechanics and orbital transfer problems. Written for analysis of powered or unpowered vehicles operation near rotating oblate planet, typical applications include: guidance and flight-control system simulation and analysis, loads and dispersion-type analysis.

B77-10421**TRANSONIC FLOW ABOUT AIRFOILS**

F. BAUER (New York Univ.), P. GARABEDIAN (New York Univ.), A. JAMESON (New York Univ.), and D. KORN (New York Univ.)

Mar. 1978

LANGLEY-12265**Vol. 2, No. 4, p. 521**

Program analyzes airfoils that permit transonic flow for subsonic free-stream mach numbers. Transonic refers to aircraft speeds less than speed of sound, but close enough so that top of wing, where airflow is fastest, mach number becomes greater than 1. Program should aid design phase of new airfoil and in analysis of existing airfoils.

B77-10422**DESIGN AND ANALYSIS OF SUPERSONIC AIRCRAFT**

J. L. COLEMAN (Boeing Co.), J. L. LUNDY (Boeing Co.), and W. D. MIDDLETON (Boeing Co.)

Mar. 1978

LANGLEY-12237**Vol. 2, No. 4, p. 521**

Integrated system of computer programs, developed for design and analysis of supersonic configurations, uses linearized-theory methods to calculate surface pressures and uses supersonic area-rule concepts in combination with linearized theory to calculate aerodynamic force coefficients. Programs include constraints on linear theory methods to provide physical realism. Package proves useful for any type of supersonic configuration.

B77-10423**COMPRESSIBLE LAMINAR BOUNDARY-LAYER FLOW**

J. E. CARTER

Mar. 1978

LANGLEY-12254**Vol. 2, No. 4, p. 522**

Program computes compressible laminar boundary-layer flow over yawed infinite wing including distributed suction. Computations are useful in efforts to implement boundary-layer suction on wing to maintain laminar flow in order to reduce net drag.

Program contains number of approximations to simplify analysis; yet results are accurate enough to be useful, particularly in preliminary design phase.

07 MACHINERY

B77-10117

ANNULAR MOMENTUM-CONTROL DEVICE

J. LYMAN (Cambridge Thermionic Corp.), C. H. HENRIKSON (Ball Bros. Res. Corp.), and F. M. MANDERS (Ball Bros. Res. Corp.)

Jun. 1977 See also NASA-CR-144917 (N76-19457)

LANGLEY-11914 Vol. 2, No. 1, p. 129

Rotating ring stores momentum in mechanical system. Drag is reduced by suspending rotating part in magnetic field. Combination of composites and ferroceramic materials are used, providing a strong stiff device, which is better damped than metals.

B77-10118

LOW-LOSS ENERGY STORAGE FLYWHEEL

H. E. EVANS and P. A. STUDER

Jun. 1977

GSFC-12030 Vol. 2, No. 1, p. 130

Magnetically-levitated, ironless-armature spokeless rotor is used. Ironless armature construction eliminates core losses due to hysteresis and eddy currents. Device combines features of homopolar salient poles and stationary ironless electronically commutated armature.

B77-10119

CLOSED-CYCLE HYDROGEN-FUELED ENGINE

E. A. LAUMANN and R. K. REYNOLDS

Jun. 1977

NPO-13763 Vol. 2, No. 1, p. 131

Innovation avoids pollution by retaining combustion products. Potential uses include applicability to pollution-free powerplant using intermittent solar energy. Engine parts are fabricated from silicon carbide, silicon nitride, stainless steel, and other high-tensile strength materials.

B77-10120

ROTATING MOBILE LAUNCHER

T. J. GREGORY

Jun. 1977

ARC-10979 Vol. 2, No. 1, p. 133

Apparatus holds remotely piloted arm that accelerates until launching speed is reached. Then vehicle and counterweight at other end of arm are released simultaneously to avoid structural damage from unbalanced rotating forces.

B77-10121

MASS-BALANCED PORTABLE STAIRWAY

J. J. KERLEY, JR.

Jun. 1977

GSFC-12172 Vol. 2, No. 1, p. 134

Multilevel upwardly expandable scaffold accommodates up to four workers. Device consists of base, tower sections, and gangway which are stacked to required height and bolted together for vertical stability. Hollow central rectangular column affords convenient place to store tools and equipment. Maintenance requirements reduced through elimination of hydraulic devices to lift structure.

B77-10122

HAND FIN FOR SWIMMING

H. L. MARTIN

Jun. 1977

M-FS-21632 Vol. 2, No. 1, p. 135

Paddle mounted on forearm aids propulsion and maneuverability and frees hand for work without interference.

B77-10123

SHARPENING BALL-NOSE MILL CUTTERS

C. F. BURCH

Jun. 1977

LANGLEY-10450

Vol. 2, No. 1, p. 135

Economical attachment allows faster, more precise grinding. Vibrationless and rigid relation between grinding wheel and cutter allows for extremely high finish and accurate grinding. Leveling device levels flutes with respect to toolholder rotation that generates ball-nose radius. Constant relief around entire profile of cutting edge produces longer tool life.

B77-10124

ELIMINATE GAS-ENTRAINED DIRT FROM SHAFT SEALS

L. P. LUDWIG

Jun. 1977 See also NASA-CR-134739 (N75-19243)

LEWIS-11855

Vol. 2, No. 1, p. 137

Technique using counter-pumping principle in conjunction with high centrifugal-force field to separate debris entrained in fluid.

B77-10125

FUEL FROM WASTES HELPS POWER DIESEL ENGINES

L. G. MONFORD

Jun. 1977 See also NASA-TM-X-58188 (N77-14955)

MSC-16598

Vol. 2, No. 1, p. 138

Gas from waste is used as fuel supplement for diesel engines. Gases supplement diesel-fuel consumption by as much as twenty percent without adversely affecting engine performance or engine parts.

B77-10127

ADAPTIVE CONTROL FOR WELD SKATE

R. E. IVES, W. A. WALL, JR., M. M. BRUCE, JR. (SCI Systems, Inc.), L. H. GARD (SCI Systems, Inc.), and P. P. PRYOR, JR. (SCI Systems, Inc.)

Jun. 1977

M-FS-23620

Vol. 2, No. 1, p. 142

Modified weld state is more mechanically stable and welding speed error is reduced. Constant torch-tip travel rate is maintained even with curved work surfaces.

B77-10128

INDIRECT RESISTANCE WELDING

N. ITTNER (Martin Marietta Corp.) and D. LAINTZ (Martin Marietta Corp.)

Jun. 1977

LEWIS-12149

Vol. 2, No. 1, p. 142

Lap joints in thin-wall piping, tanks, and complex shapes are resistance-welded with both anode and cathode on same side of wall.

B77-10129

PRINTING CIRCUITS WITHOUT A MASK

G. D. OLIVER

Jun. 1977

NPO-11758

Vol. 2, No. 1, p. 143

Proposed technique uses electronically controlled electrode/nozzle to deposit fine-line metallic patterns.

B77-10227

HEAT PIPE CONTROLS BEARING TEMPERATURE

A. CORMACK, III (Rockwell Intern. Corp.) and J. E. NOTTI, JR. (Rockwell Intern. Corp.)

Sep. 1977

LANGLEY-11846

Vol. 2, No. 2, p. 267

Major design problem in integrated Power/Attitude Control System (IPACS) is effective method for transporting heat from bearing inner race of the rotating assembly to minimize inner-race temperatures and temperature differential across bearing. High-speed rotating assembly in this application is essentially device for storing energy in electrically-driven rotating flywheel.

07 MACHINERY

B77-10228

QUICK-DISCONNECT COUPLING/FILTER

F. JANKOWSKI

Sep. 1977

M-FS-22323

Vol. 2, No. 2, p. 268

Two-part coupling system for hose lines combines both connection and filter in one fitting. Flared fittings make coupling less prone to leakage, and reduced number of components speeds operation. These features may make coupler useful with liquid-bulk carriers, where materials (e.g., milk, cooking oil, and liquid sugar) must be transferred quickly from vehicle to storage facility.

B77-10229

INTEGRATED TEMPERATURE SENSOR

R. L. HERRING (McDonnell Douglas Astronautics Co.) and L. L. PAGEL (McDonnell Douglas Astronautics Co.)

Sep. 1977

LANGLEY-12056

Vol. 2, No. 2, p. 269

Proposed temperature-sensor/failure-detection system utilizes liquid-filled sensors attached as matrix to monitored surface. Fluid passages are integral part of monitored surface or are small-diameter tubing in good thermal contact with monitored surface. System offers significant advantages over discrete sensors in terms of simplicity, reliability, cost, ease of installation, maintainability, and weight.

B77-10230

CARTRIDGE GETTER FOR VACUUM JACKETING

C. J. LUEBBERS (U. S. Gauge)

Sep. 1977

MSC-16610

Vol. 2, No. 2, p. 270

Inexpensively-manufactured getter cartridge save users time in vacuum system maintenance and allows almost anyone to carry out replacement procedure that formerly required skilled welder. Cartridge screws into port in outer wall of vacuum jacket. Getter is replaced by simply unscrewing cartridge rather than cutting and rewelding.

B77-10231

MAGNETICALLY-CONTROLLED BEARING LUBRICATION

A. F. WHITAKER

Sep. 1977

M-FS-23009

Vol. 2, No. 2, p. 271

Proposed magnetic-lubricant ball-bearing assembly has permanently-magnetized bearing retainer fabricated of porous material. Pores of retainer are filled with ferrolubricant. Surface tension causes retainer to deliver sufficient lubricant to nonmagnetic ball bearings.

B77-10232

FUEL INJECTOR FOR JET-STIRRED COMBUSTORS

S. G. ANDERSON

Sep. 1977

LANGLEY-12146

Vol. 2, No. 2, p. 272

Simple and inexpensive method of making quartz injectors yields injectors of superior characteristics. Quartz injector is fabricated by heating quartz rod and blowing and forming sphere on end. As with metal injectors, orifices are then drilled in spherical shell. Time required to form quartz is only 0.5 man-hour and 7.5 man-hours are required to drill holes. Total time of fabrication, 8 man-hours, is fraction of 40 man-hours required to complete metal injector. Success with technique and material is such that further substitutions for other related components are being contemplated.

B77-10311

GEARLESS SPEED-REDUCTION MOTOR

J. MADEY

Nov. 1977

GSFC-12138

Vol. 2, No. 3, p. 391

Proposed rolling electric motor has output shaft speed reductions of 1000 to 1 or better. Light compact unit uses no gears or pulleys to reduce speed presenting less bulk and frictional loss, and more efficiency.

B77-10312

OVERHEAD-HANDLING, UNIVERSAL-POSITIONING DEVICE

M. JOHNSON (Martin Marietta Corp.) and R. MANN (Martin Marietta Corp.)

Nov. 1977

M-FS-23434

Vol. 2, No. 3, p. 392

Lift-and-rotate mechanism can raise payload and reorient it while it is suspended in space. Mechanism is itself suspended from overhead lift point and is operated from single pendant/reel control panel. Lift capacity and size of mechanism is determined by application.

B77-10313

VACUUM MOUNTING FOR PIEZOELECTRIC TRANSDUCERS

D. A. TIEDE (Rockwell Intern. Corp.)

Nov. 1977

MSC-16480

Vol. 2, No. 3, p. 393

Special housing couples piezoelectric transducers to nonporous surfaces for ultrasonic or acoustic-emission testing. Device, while providing sound isolation on flat or nonflat surfaces, can be attached and detached quickly. Vacuum sealing mechanism eliminates need for permanent or semipermanent bonds, viscous coupling liquids, weights, magnets, tape, or springs ordinarily used.

B77-10314

PLASTER CORE WASHOUT TOOL

R. M. HEISMAN (Rockwell Intern. Corp.), A. R. KEIR (Rockwell Intern. Corp.), and K. TERAMURA (Rockwell Intern. Corp.)

Nov. 1977

MSC-16635

Vol. 2, No. 3, p. 394

Tool powered by pressurized water or air removes water soluble plaster lining from Kevlar/epoxy duct. Rotating plastic cutterhead with sealed end fitting connects flexible shaft that allows tool to be used with curved ducts.

B77-10315

FLAT-PACKAGE DIP HANDLING TOOL

E. ANGELOU and R. FRASER

Nov. 1977

GSFC-12201

Vol. 2, No. 3, p. 394

Device, using magnetic attraction, can facilitate handling of integrated-circuit flat packages and prevent contamination and bent leads. Tool lifts packages by their cases and releases them by operation of manual plunger.

B77-10316

HIGH GANTRY FOR LIFTING AND HANDLING

J. J. KERLEY, JR. and W. T. TERENIAK

Nov. 1977

GSFC-12235

Vol. 2, No. 3, p. 395

Standard gantry has been inexpensively modified with standard pipes to allow lifting of heavy loads to distances between 14 and 30 ft. Addition of air mounts permits extensive and sensitive equipment to be moved smoothly and safely over smooth or moderately rough surfaces. Unit has been tested at 6000 pounds without yielding.

B77-10424

FOLDABLE BEAM

J. V. COYNER (Astro Research Corp.) and J. M. HEDGEPEETH (Astro Research Corp.)

Mar. 1978

LANGLEY-12077

Vol. 2, No. 4, p. 525

Articulated beam becomes rigid triangular truss when deployed and is stored by folding it flat as it is heliced about cylinder. Beam is composed of longerons, diagonals, and scissors arms. Folding produces flat envelope that allows more beams to be stowed on cylinder than would be possible if beams did not fold flat.

B77-10425

STEP MOTOR DAMPING FOR HIGH-INERTIA LOADS

L. J. VEILLETTE

Mar. 1978

GSFC-11871**Vol. 2, No. 4, p. 526**

Brushless tachometer generates signals for moving large and varying loads precisely. Stepper waveform generator sends short sequence of pulses to instruct control logic circuit to perform its function—that is, to select proper windings and directions of excitation to drive and damp motor. Control logic circuit bases decisions on following logic signals, derived from tachometer: rate direction, rate threshold, and position.

B77-10426**SELF-ALIGNING VALVE POPPET AND SEAT**

U. P. OLIVAS (Beckman Instr., Inc.)

Mar. 1978

LANGLEY-11623**Vol. 2, No. 4, p. 527**

Poppet-and-seat combination is useful in fluid-control system that has to operate at high temperatures with low leak rates. Contaminants in flow stream are removed before they reach sealing surfaces by altering direction of flow several times before it enters poppet-and-seat flow passage. Particles are separated and deposited on surfaces not affecting sealing performance.

B77-10427**FLOATING NUT FOR SPACECRAFT APPLICATION**

L. J. ELL (TRW, Inc.) and R. B. MATHEWSON (TRW, Inc.)

Mar. 1978

M-FS-23248**Vol. 2, No. 4, p. 528**

Nut overcomes mechanical mismatch from accumulated tolerances and maintains assembly even if mounting screw loosens. Nut and screws can be painted with bonding agent to insure lock. If assemblies are removed frequently, nut and screws can be made of steel to reduce wear and tear on threads and risk of faulty threads.

B77-10428**NO-SPILL TOUCHUP PAINT CONTAINER**

R. L. PETERS (Rockwell Intern. Corp.)

Mar. 1978

MSC-16269**Vol. 2, No. 4, p. 529**

Container has two-piece threaded device that is installed in hole in standard metal lid. In addition to preventing spillage, device provides better brush support and wiper edge.

B77-10429**MEASUREMENT OF FRICTION AND WEAR**

D. H. BUCKLEY

Mar. 1978 See also NASA TM-X-73437 (N77-19901)

LEWIS-12910**Vol. 2, No. 4, p. 529**

Report reviews various techniques and surface tools available for study of wear of materials. Atomic nature of solid surfaces plays important role in wear behavior for materials in solid-state contact.

B77-10430**DISCONNECTS, COUPLINGS, FITTINGS, FIXED JOINTS, AND SEALS**

Innovator not given (Space Propulsion and Power Division) Mar. 1978 See also NASA SP-8119 (N77-24191)

LEWIS-12948**Vol. 2, No. 4, p. 530**

Design monograph organizes and presents significant experience and knowledge accumulated in development and operational programs. Assisting systems designers, it reviews and assesses current design practices establishes guides for achieving greater consistency in design, increased reliability in end product, and greater efficiency in design effort.

C. L. GREEN

Jun. 1977

M-FS-23545**Vol. 2, No. 1, p. 141**

Easily-formulated detergent solution (aromatic polyglycoether) lowers cost and increases quality of aluminum stud welds made by capacitor-discharge welding.

B77-10130**SHRINK TUBING IDENTIFIER**

R. F. PLUMMER (Lockheed Electronics Co.)

Jun. 1977

MSC-16430**Vol. 2, No. 1, p. 144**

Modified typewriter is used to code small-batch lengths of shrink tubing. Method replaces heat-operated wire-marking machines, is faster, and less hazardous to operating personnel.

B77-10131**DETECTING WIRE-BOND FAILURES**

A. KOUDOUNARIS (Hughes Aircraft Co.)

Jun. 1977

M-FS-23584**Vol. 2, No. 1, p. 145**

Procedure detects wire-bond failures in thick-film substrates upon which many bonding pads are mounted.

B77-10132**COMMUTATOR ASSEMBLY TECHNIQUE**

J. B. DAVENPORT, JR., C. C. DAVIS, and G. M. JURSCAGA

Jun. 1977

LANGLEY-11844**Vol. 2, No. 1, p. 146**

Commutator design for fractional horsepower motors combines changes in contact form factor and improved bonding procedures to enhance reliability.

B77-10133**VIBRATION IMPROVES SINGLE-CRYSTAL YIELD**

C. LI (Grumman Aerospace Corp.) and D. NICKAL (Materials Res. Corp.)

Jun. 1977 See also B77-10144

M-FS-23683**Vol. 2, No. 1, p. 147**

Yield of single gallium arsenide crystals is improved by vibrating scan motor.

B77-10134**MICROCIRCUIT PHOTOGRAPHY TECHNIQUE**

D. DAHMS and B. SLAUGHTER

Jun. 1977

GSFC-12199**Vol. 2, No. 1, p. 148**

Technique increases size and clarity of microcircuit montage pictures.

B77-10135**METHOD OF LAMINATING USING A PNEUMATIC ANVIL**

W. C. HEIER

Jun. 1977

LANGLEY-11850**Vol. 2, No. 1, p. 148**

Method of laminating resin-impregnated fiber layup employs pneumatic anvil. Technique does not disarrange or crush fibers.

B77-10136**RIGIDIFIED INFLATABLE STRUCTURES**

R. V. KNAUS, JR. (Lockheed Electronics Co.)

Jun. 1977

MSC-16069**Vol. 2, No. 1, p. 149**

Rigid inflatables can be constructed from impregnated material that is polymerized by sunlight, heat, or other means after inflation. After rigidification, structure can be made stronger by filling with suitable foam.

B77-10137**ROTATION MOLDING OF FLYWHEELS**

G. M. WEYLER, JR.

Jun. 1977

M-FS-23674**Vol. 2, No. 1, p. 150**

Flywheel fiber composites are prestressed for maximum strength at operating speed.

08 FABRICATION TECHNOLOGY

B77-10126**WETTING AGENT FOR STUD WELDING**

08 FABRICATION TECHNOLOGY

B77-10138

FLEXIBLE FOAM MASKING FOR PARYLENE COATING

F. W. OBERIN (Hughes Aircraft Co., Aerospace Group)

Jun. 1977

M-FS-23129

Vol. 2, No. 1, p. 151

Hybrid-microcircuit masking technique improved to prevent unwanted parylene coating of lead packages.

B77-10139

MONORAIL FOR PRODUCTION HANDLING OF LARGE PARACHUTES

R. T. CROWELL

Jun. 1977

KSC-11042

Vol. 2, No. 1, p. 152

Heavy parachutes are transported through work and inspection stations via monorail system.

B77-10140

COMPUTER-AIDED MANUFACTURE OF SCULPTURED OBJECTS

L. N. MOGAVERO

Jun. 1977 See also B76-10338

HQN-10914

Vol. 2, No. 1, p. 152

Optical numerical-control tooling system can be developed by combining optical profilometer with conventional numerical-control tool. Because no contact is required, soft or delicate models can be used, extending life of model.

B77-10141

HEAVY-DUTY SANDBLAST NOZZLE

E. V. PAWLIK, G. S. PERKINS, and W. M. PHILLIPS

Jun. 1977

NPO-13823

Vol. 2, No. 1, p. 153

Inexpensive sialon (silicon/aluminum/oxygen/nitrogen) nozzle liner resists abrasion and is strong at high temperatures.

B77-10142

COLLECTORS FOR VACUUM-CLEANING LINES

W. L. HINZE (Rockwell Intern. Corp.), P. V. SAUER, JR. (Rockwell Intern. Corp.), and G. W. WILLIAMS (Rockwell Intern. Corp.)

Jun. 1977

MSC-17011

Vol. 2, No. 1, p. 154

See-through vacuum cleaning collector devices ease retrieval of small lost parts.

B77-10143

TUBE-BENDING SCALE/PROTRACTOR

A. U. MILLETT (Rockwell Intern. Corp.)

Jun. 1977

MSC-16272

Vol. 2, No. 1, p. 155

Combination protractor and scale for measuring tube bends has novel pivot that allows tube to remain in contact with scale arms for all bend angles. Device permits rapid and accurate scribing and measurement of mockup fluid lines to obtain production data.

B77-10144

GROWTH OF GAAS CRYSTALS

C. LI (Grumman Aerospace Corp.)

Jun. 1977 See also B77-10133

M-FS-23681

Vol. 2, No. 1, p. 156

Study on effects of melt and growth on solute segregation and crystal quality uses statistical techniques to reduce sample numbers and experimental costs.

B77-10233

SEMI-AUTOMATIC LABELING OF SMALL WIRES

L. P. DAVID (Rockwell Intern. Corp.), R. M. HEISMAN (Rockwell Intern. Corp.), and A. R. KEIR (Rockwell Intern. Corp.)

Sep. 1977

MSC-16233

Vol. 2, No. 2, p. 275

Semi-automatic-wire labeling equipment installs heat-shrink identification sleeves on small-diameter wires for moderate-size production runs. Supply reel contains wire of desired diameter and is cut into lengths set on the measuring rolls. Required number of identification sleeves are slipped over wire, which is

then placed through sleeve-releasing mechanism. Sleeves are shrunk at 350 degrees F in an infrared oven.

B77-10234

VIBRATION-RESISTANT PC BOARD FEEDTHROUGH

H. MANDEL (TRW, Inc.) and J. R. MUNIZ (TRW, Inc.)

Sep. 1977

MSC-16371

Vol. 2, No. 2, p. 276

New fabrication method uses annealed-nickel ribbon loop to interface coaxial input (or output) connector to printed-wiring board. Inexpensive ribbon interface cuts vibration-induced failure between coaxial cable and printed-wiring board.

B77-10235

INSPECTION TOOL FOR BUTT-WELDED TUBING

D. P. HORMAN

Sep. 1977

NPO-13975

Vol. 2, No. 2, p. 277

Inspection tool for tubing consists of metal casing housing elastic collar. Collar is clamped around weld site under test. Leakage through weld is contained within chamber and is bled to detector via tubing attached to fitting. Tool, originally designed to detect fluid leakage in tubing, can be used to detect gas leaks.

B77-10236

MOLDING CORK SHEETS TO COMPLEX SHAPES

M. H. SHARPE, W. G. SIMPSON, and H. M. WALKER

Sep. 1977

M-FS-23626

Vol. 2, No. 2, p. 278

Partially cured cork sheet is easily formed to complex shapes and then final-cured. Temperature and pressure levels required for process depend upon resin system used and final density and strength desired. Sheet can be bonded to surface during final cure, or can be first-formed in mold and bonded to surface in separate step.

B77-10237

HONEYCOMB CHASSIS FOR ELECTRONIC COMPONENTS

W. S. READ and B. W. STEBBINS

Sep. 1977

NPO-13891

Vol. 2, No. 2, p. 279

In new electronic chassis support, machined honeycomb members are used to change basic relationship between chassis and support structure. Improved chassis combines internal and external support and heat dissipation by altering chassis internal geometry. Honeycomb materials allow mechanical support and thermal-load sharing to be combined at lower weight and lower cost than previous equipment.

B77-10238

EXTRUDED EDGE MEMBERS FOR HONEYCOMBS

D. R. HASKELL (Rockwell Intern. Corp.)

Sep. 1977

MSC-16428

Vol. 2, No. 2, p. 280

Edge members in bonded honeycomb panel structures are conventionally made by machining channels in aluminum bars. Open ends are stuffed with honeycomb core, using intumescent adhesive. Less expensive technique eliminates need for stuffing. Extended edges are more reliable, lighter, and easier to install. New manufacturing method may prove useful in fabricating structures such as air-frames, recreational-vehicle frame members, and the like in which weight savings is primary goal.

B77-10239

POLYIMIDE THIN-FILM DIELECTRICS ON FERROELECTRICS

R. V. GALIARDI (Rockwell Intern. Corp.)

Sep. 1977

LANGLEY-11996

Vol. 2, No. 2, p. 280

Conducting layers of multi-layered thin-film ferroelectric device, such as is used in liquid crystal/ferroelectric display, can be electrically isolated using thin-film layer of polyimide. Ease of application and high electrical-breakdown strength allow dependable and economical means of providing dielectric for other thin-film microelectronic devices.

B77-10240**THE PROCESSING OF MATERIALS IN OUTER SPACE**

S. H. GELLES (Battelle Mem. Inst.) and E. W. COLLING (Battelle Mem. Inst.)

Sep. 1977 See also NASA CR-150156 (N77-16075)

M-FS-23695 Vol. 2, No. 2, p. 282

Zero-gravity environment may lead to fabrication of new and improved materials. According to comprehensive study of application of this promising technology to superconducting and electrical contact materials, outer space processing could improve microstructure and homogeneity of many single and multicomponent systems formed from solidification of fluid phases. New structures that are impossible to form terrestrially may also be accessible in space environment.

B77-10317**VACUUM-ASSISTED IMPREGNATION OF MATERIALS**

D. C. ROGERS (Vought Corp.) and D. M. SHUFORD (Vought Corp.)

Nov. 1977

MSC-16785 Vol. 2, No. 3, p. 399

Vacuum-assisted liquid-impregnation treatment for silicon-carbide-reinforced carbon-carbon systems improves resistance of silicon-carbide coating to attack by oxygen at elevated temperatures. Porosity reduction treatment might also be applied to sintering silicon-carbide bodies to increase their density and to make them more resistant to hot gases for use in jet engines.

B77-10318**LOW-REFLECTION SILICON SOLAR CELLS**

C. R. BARAONA and H. W. BRANDHORST, JR.

Nov. 1977 See also NASA TM-X-71715 (N75-24119)

LEWIS-12418 Vol. 2, No. 3, p. 400

Alteration of surface of silicon solar cell with chemical etchant prior to application of antireflection (AR) coating and encapsulant FEP Teflon, reduces surface reflectivity to 2%. Reduced reflection achieved occurs at all wavelengths resulting in improved short circuit current and spectral response. Improved collection efficiency is also expected.

B77-10319**ION-BEAM SPUTTERING INCREASES SOLAR-CELL EFFICIENCY**

D. E. BURK (Colorado State Univ.), J. B. DUBOW (Colorado State Univ.), and R. R. SITES (Colorado State Univ.)

Nov. 1977 See also NASA CR-13549 (N77-16248)

LEWIS-12895 Vol. 2, No. 3, p. 401

Ion-beam sputtering, fabrication of oxide-semiconductor-on-silicon (OSOS) solar cells, results in cells of 12% efficiency. Ion-beam sputtering technique is compatible with low-cost continuous fabrication and requires no high-temperature processing.

B77-10320**DRILLING TECHNIQUE FOR CRYSTALS**

T. HUNTER (Univ. of Alabama) and I. MIYAGAWA (Univ. of Alabama)

Nov. 1977 See also NASA CR-143886 (X75-10234)

M-FS-23580 Vol. 2, No. 3, p. 402

Hole-drilling technique uses special crystal drill in which drill bit rotates at fixed position at speed of 30 rpm while crystal slowly advances toward drill. Technique has been successfully applied to crystal of Rochell salt, Triglycine sulfate, and N-acetylglycine. Technique limits heat buildup and reduces strain on crystal.

B77-10321**MODULAR MULTIAPERATURES FOR LIGHT SENSORS**

A. A. RIZZO (TRW, Inc.)

Nov. 1977

M-FS-23249 Vol. 2, No. 3, p. 403

Process involves electroplating multiaperature masks as unit, eliminating alignment and assembly difficulties previously encountered. Technique may be applied to masks in automated and surveillance light systems, when precise, wide angle field of view is needed.

B77-10322**ARC-STARTING AID FOR GTA WELDING**

E. L. WHIFFEN (Rockwell Intern. Corp.)

Nov. 1977

MSC-19495 Vol. 2, No. 3, p. 404

Three-in-one handtool combining arc-gap gage, electrode tip sander, and electrode projection gate, effectively improves initiation on gas tungsten arc (GTA), automatic skate-welding machines. Device effects ease in polishing electrode tips and setting exactly initial arc gap before each weld pass.

B77-10323**RESTORATION OF BEARINGS**

R. J. PARKER, E. V. ZARETSKY, and H. HANAU (Ind. Tectonics Inc.)

Nov. 1977 See also NASA TN-D-8486 (N77-23495); NASA TM-X-73440 (N76-26512)

LEWIS-12631 Vol. 2, No. 3, p. 404

Process consisting of grinding raceways to oversize but original quality condition and installing new oversize balls or bearings restores wornout ball and roller bearings to original quality, thereby doubling their operating life. Evaluations reveal process results in restoration of 90% of replaced bearings at less than 50% of new-bearing costs.

B77-10324**POTTING PROCEDURE FOR ELECTRONIC COMPONENTS**

A. G. RUBINO (Singer Co.) and J. ZIMMERMAN (Singer Co.)

Nov. 1977

MSC-16290 Vol. 2, No. 3, p. 406

Potting process is modified to effect a match more closely between embedded electronic components, potting mediums, and thermal environment. Application of room-temperature vulcanizing silicone rubber band cured in modified thermal cycle minimizes coil-to-resin adhesion and thus lowers stresses between transformer and potting compound.

B77-10325**UNIFORM SPRAY COATING FOR LARGE TANKS**

J. M. CARTER

Nov. 1977

M-FS-23097 Vol. 2, No. 3, p. 406

System employs spray facility located within ventilated plastic booth to uniformly coat exterior of large cylindrical tanks with polyurethane foam insulation. Coating target is rotated on turntable while movable spray guns apply overlapping spirals of foam. Entire operation may be controlled by single operator from remote station.

B77-10326**ATTACHING STRAIN GAGES BY ULTRASONIC PLASTIC WELDING**

A. T. SHEPPARD (Martin Marietta Corp.) and L. SILBERT (Martin Marietta Corp.)

Nov. 1977

M-FS-23433 Vol. 2, No. 3, p. 408

Technique employs application of pressure and ultrasound to effect welding of encapsulated strain gages to metallic surfaces. Process requires no heat or adhesives. Technique might also be used to simplify curing of epoxy adhesives and for attachment problems like bonding cryogenic temperature sensors to structural parts.

B77-10431**TECHNOLOGY OF WELDING ALUMINUM ALLOYS-I**

J. R. HARRISON (Rockwell Intern. Corp.), L. J. KORB (Rockwell Intern. Corp.), and C. E. OLEKSIK (Rockwell Intern. Corp.)

Mar. 1978 See also B77-10432; B77-10433; B77-10434

MSC-18081 Vol. 2, No. 4, p. 533

Systems approach to high-quality aluminum welding uses square-butt joints, kept away from sharp contour changes. Intersecting welds are configured for T-type intersections rather than crossovers. Differences in panel thickness are accommodated with transition step areas where thickness increases or decreases within weld, but never at intersection.

B77-10432**TECHNOLOGY OF WELDING ALUMINUM ALLOYS-II**

Innovator not given (Rockwell Intern. Corp.) Mar. 1978 See also B77-10431; B77-10433; B77-10434

MSC-18082

Vol. 2, No. 4, p. 534

Step-by-step procedures were developed for high integrity manual and machine welding of aluminum alloys. Detailed instructions are given for each step with tables and graphs to specify materials and dimensions. Throughout work sequence, processing procedure designates manufacturing verification points and inspection points.

B77-10433**TECHNOLOGY OF WELDING ALUMINUM ALLOYS-III**

J. R. HARRISON (Rockwell Intern. Corp.), L. J. KOR (Rockwell Intern. Corp.), and C. E. OLEKSIK (Rockwell Intern. Corp.)

Mar. 1978 See also B77-10431; B77-10432; B77-10434

MSC-18083

Vol. 2, No. 4, p. 535

Control of porosity in weld beads was major objective in development of aluminum welding program. Porosity, most difficult defect to control, is caused by hydrogen gas unable to escape during solidification. Hard tooling allows hotter bead than free-fall tooling so hydrogen bubbles can boil out instead of forming pores. Welding position, moisture, and cleanliness are other important factors in control of porosity.

B77-10434**TECHNOLOGY OF WELDING ALUMINUM ALLOYS-IV**

R. GINEZ (Rockwell Intern. Corp.), J. R. LEWIS (Rockwell Intern. Corp.), A. U. MILLETT (Rockwell Intern. Corp.), K. A. SAENGER (Rockwell Intern. Corp.), J. K. SKELLY (Rockwell Intern. Corp.), V. E. STANDIFORD (Rockwell Intern. Corp.), and J. O. WHITEMAN (Rockwell Intern. Corp.)

Mar. 1978 See also B77-10431; B77-10432; B77-10433

MSC-18084

Vol. 2, No. 4, p. 536

Skate-weld carriage and track assembly were developed for controlled fusion welding on compound-curvature surfaces. Unlike fixed-position carriage used for vertical, horizontal, and circumferential welding, carriage has suspension system that permits angular positioning of weld head on carriage. It also has carriage-and-drive track mechanism capable of traveling over compound curvatures. Carriage is designed with universal mounting platform so that slim tools, weld heads, or X-ray units can be interchanged without need for realignment.

B77-10435**VACUUM SOLDERING A METALIZED CERAMIC TO A METAL CARRIER**

B. D. GALLAGHER, A. W. KERMODE, and R. C. MAYNE

Mar. 1978

NPO-14037

Vol. 2, No. 4, p. 538

Using vacuum-soldering method, attachments that are 85 to 95 percent void free can be made. Method is useful for various large scale substrate attachment processes in microelectronic industry.

B77-10436**LINEAR DIMENSION ESTABLISHES WELD INTEGRITY**

J. C. LEWIS

Mar. 1978 See also B77-10437

NPO-13977

Vol. 2, No. 4, p. 539

Study finds that when automatic in-place tube-welding head is used to butt-weld two stainless-steel tubes together, welding process can be made so reliable that when weld exceeds a certain minimum dimension, penetration of weld can be assumed to be complete. Detailed procedure for tube welding considers effects of arc gap, shielding gas, welding speed, and other parameters related to weld reliability.

B77-10437**TUBE-WELD INSPECTION TOOL**

H. B. STANFORD

Mar. 1978 See also B77-10436

NPO-13978

Vol. 2, No. 4, p. 540

Tool compares weld width with notch width. Weld is considered satisfactory if weld is wider than notch. Fiber optics

permit inspection head to be completely rotated around tube for complete inspection of weld. Forty-five degree mirror mounted over notch aids in comparing notch and weld widths.

B77-10438**HEAT-DISSIPATING ALUMINUM WIRE**

J. D. DOYLE (Rockwell Intern. Corp.) and E. J. STRINGER (Rockwell Intern. Corp.)

Mar. 1978

M-FS-24274

Vol. 2, No. 4, p. 540

Surface area, and consequently heat dissipation, is increased by using star-shaped, rather than round cross section, for aluminum wire. When used with modern high-temperature insulating materials, pointed-star wire is suitable for applications where low-cost light-weight wire is required.

B77-10439**CABLE-CLAMP INSTALLATION TOOL**

M. B. NOEL

Mar. 1978

NPO-13976

Vol. 2, No. 4, p. 541

Tiny vise simplifies installation of cable clamps in confined spaces. As thumbscrew is tightened, ears of clamps are forced together, and bolt passes through all lugs and into hole in stationary jaw.

B77-10440**POSITIONING BARS FOR LARGE WIRE HARNESSSES**

J. R. GLESSNER (Rockwell Intern. Corp.)

Mar. 1978

MSC-18420

Vol. 2, No. 4, p. 542

By tying positioning bars to harness, its configuration can be preserved during transport, thus facilitating installation. Harness can also be showed temporarily by placing hanging hooks on end of bar.

B77-10441**ADDING THROUGH-BOLT HOLES TO PIN-FIN COLD PLATES**

E. P. RUPPE (Rockwell Intern. Corp.)

Mar. 1978

MSC-18421

Vol. 2, No. 4, p. 543

Spot-welding technique is less expensive than secondary-brazing and electron-beam methods. With procedure, standard plates can be modified in quantity for various mounting configurations without need for special tooling.

B77-10442**SPACE-AGE VACUUM CLEANING**

H. W. SCHNEIDER

Mar. 1978

NPO-14008

Vol. 2, No. 4, p. 544

Varied concepts for brushes and air handling remove dirt more effectively. Vacuum-cleaning techniques may be used in combination. Many of these concepts, while not appropriate for household cleaning, may find use in industry, research, and medicine.

B77-10443**BONDING ALUMINUM BEAM LEADS**

F. S. BURKETT (Electronic Communications, Inc.)

Mar. 1978 See also NASA CR-124434 (N73-32369)

M-FS-23183

Vol. 2, No. 4, p. 546

Report makes it relatively easy for hybrid-circuit manufacturers to convert integrated circuit chips with aluminum bead leads. Report covers: techniques for handling tiny chips; proper geometries for ultrasonic bonding tips; best combinations of pressure, pulse time, and ultrasonic energy for bonding; and best thickness for metal films to which beam leads are bonded.

B77-10444**ADHESIVELESS AND GROOVELESS SEALING TECHNIQUE**

J. W. MARTIN (TRW, Inc.) and H. M. ELMENDORF (TRW, Inc.)

Mar. 1978

LANGLEY-11779

Vol. 2, No. 4, p. 546

Sealing technique eliminates groove or adhesive bonding and

its attendant heating and curing need to finely finish at least one surface to be sealed. Seal could be mounted either inside or outside seal line, and could be installed in final assembly without exposing part to heat and pressure of curing.

B77-10445
CAST-IN-PLACE GROMMETS FOR HONEYCOMB SUBSTRATES

M. K. PARKER

Mar. 1978

NPO-13868

Vol. 2, No. 4, p. 548

Teflon grommet, cast in place, is easily installed and compatible with honeycomb structural integrity. After casting, grommet blank had only minimum hole size; however, opening can be enlarged by drilling to accommodate larger range of cable diameters. Since grommet is installed flush with adjacent mounting surfaces, it cannot fall out.

B77-10446
WELDING THERMOCOUPLES TO COLUMBIUM

F. R. DEMONBRUN (Northrop Corp.), L. A. GOUDIE (Northrop Corp.), and J. C. HUGULEY (Northrop Corp.)

Mar. 1978

MSC-16676

Vol. 2, No. 4, p. 548

Procedure developed for attaching thermocouples is simple and explicit. It includes such steps as preparing columbium surface by cleaning it, depositing globule of titanium, and remelting globule and inserting thermocouple wires in it.

B77-10447
AUTOMATED PROCESS PLANNING SYSTEM

W. MANN

Mar. 1978

ARC-11145

Vol. 2, No. 4, p. 549

Program helps process engineers set up manufacturing plans for machined parts. System allows one to develop and store library of similar parts characteristics, as related to particular facility. Information is then used in interactive system to help develop manufacturing plans that meet required standards.

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B77-10145
MATHEMATICAL MODEL OF FIRES

C. D. COULBERT

Jun. 1977

NPO-13950

Vol. 2, No. 1, p. 159

Model allows predictions of future development of fire and can be used to evaluate different control methods at particular stages of fire. Five constraints considered are flame-spread rate, fuel-surface limit, airflow limit, quantity of fuel, original quantity of air.

B77-10146
DATA ACQUISITION FOR SOLAR AND WIND ENERGY

R. A. GARDNER and M. S. REID

Jun. 1977

NPO-13908

Vol. 2, No. 1, p. 159

Versatile automatic system collects data from wind and solar energy sensors. System allows changes in data types, number of channels, sensor location and speed of recording.

B77-10147
LIQUEFIED NATURAL GAS (LNG) SAFETY

P. M. ORDIN

Jun. 1977 See also NASA-TM-X-73408 (N77-15208)

LEWIS-12720

Vol. 2, No. 1, p. 160

Bibliography, assembled from computer search of NASA

Aerospace Safety Data Bank, including title of report, author, abstract, source, description of figures, key references, and key words or subject terms. Publication is indexed by key subjects and by authors. Items are relevant to design engineers and safety specialists.

B77-10148
FINITE-ELEMENT STRUCTURAL ANALYSIS

T. FURUIKE (Rockwell Intern. Corp.) and J. C. LONG (Rockwell Intern. Corp.)

Jun. 1977

MSC-16320

Vol. 2, No. 1, p. 161

Computer program aids in reduction and analysis of data. It determines critical loading conditions for critical values of reactions, applied loads, deflections, stresses, internal loads, etc. Input to program must be in one of specified three-part format.

B77-10149
MULTIVARIATE-NORMALITY GOODNESS-OF-FIT TESTS

L. W. FALLS and H. L. CRUTCHER (U. S. Department of Commerce)

Jun. 1977

M-FS-23523

Vol. 2, No. 1, p. 161

Computer program applies chi-square Pearson test to multivariate statistics for application in any field in which data of two or more variables (dimensions) are sampled for statistical purposes. Program handles dimensions two through five, with up to thousand data sets.

B77-10241
SHUTTLE AVIONICS VISUAL DISPLAY

A. A. YOSHIMURA (Rockwell Intern. Corp.)

Sep. 1977

MSC-16591

Vol. 2, No. 2, p. 285

SAV-D system is composed of display description language (DDL) and its language processor. Language provides for the description of displays in terms of static and variable references for text, special symbols, lines, and circles. SAV-D permits use of high-order English-like language to describe complete displays with increased speed and ease of coding, debugging, and modification. It also allows one to specify static and variable attribute, such as location, flash, dash, character size, and intensity.

B77-10242
FLEXIBLE DATA-MANAGEMENT SYSTEM

J. J. PELOUCH, JR.

Sep. 1977

LEWIS-12570

Vol. 2, No. 2, p. 285

Combined ASRDI Data-Management and Analysis Technique (CADMAT) is system of computer programs and procedures that can be used to conduct data-management tasks. System was developed specifically for use by scientists and engineers who are confronted with management and analysis of large quantities of data organized into records of events and parametric fields. CADMAT is particularly useful when data are continually accumulated, such as when the need of retrieval and analysis is ongoing.

B77-10327
PROGRAMMABLE CONVOLUTION VIA THE CHIRP Z-TRANSFORM WITH CCD'S

D. D. BUSS (Texas Instr., Inc.)

Nov. 1977

LANGLEY-12109

Vol. 2, No. 3, p. 411

Technique filtering by convolution in frequency domain rather than in time domain presents possible solution to problem of programmable transversal filters. Process is accomplished through utilization of chip z-transform (CZT) with charge-coupled devices

B77-10328
EDGE-FOLLOWING ALGORITHM FOR TRACKING GEOLOGICAL FEATURES

J. C. TIETZ (Martin Marietta Corp.)

Nov. 1977

LANGLEY-12051

Vol. 2, No. 3, p. 412

Sequential edge-tracking algorithm employs circular scanning

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to point permit effective real-time tracking of coastlines and rivers from earth resources satellites. Technique eliminates expensive high-resolution cameras. System might also be adaptable for application in monitoring automated assembly lines, inspecting conveyor belts, or analyzing thermographs, or x ray images.

B77-10329

CLASSIFICATION ACCURACY IMPROVEMENT

R. KISTLER (Environmental Res. Inst. of Michigan) and F. J. KRIEGLER (Environmental Res. Inst. of Michigan)
Nov. 1977

LANGLEY-12102

Vol. 2, No. 3, p. 413

Improvements made in processing system designed for MIDAS (prototype multivariate interactive digital analysis system) effects higher accuracy in classification of pixels, resulting in significantly-reduced processing time. Improved system realizes cost reduction factor of 20 or more.

B77-10330

CONDITIONAL SAMPLING ANALYSIS FOR TURBULENT FLOWS

F. C. WANG

Nov. 1977 See also NASA TM-X-64886 (N74-34696)

M-FS-23126

Vol. 2, No. 3, p. 414

Previous techniques used for design of subsonic wind tunnels have been improved and combined in computer program. Program is applicable to compressible flow through, most closed-, or open throated, single-, double-, or non-return wind tunnels or ducts. Program is selfchecking and selfprotecting, thus minimizing undetected and wasteful user errors.

B77-10331

RELIABILITY ANALYSIS FOR DATA MANAGEMENT SYSTEMS

Y. HUANG (Sperry Support Services)

Nov. 1977

M-FS-23208

Vol. 2, No. 3, p. 414

Report describes approach that uses computer model and can determine configurations with optimum reliability and least cost. Approach in application to modelling computer-controlled data management systems differs from conventional reliability analysis in that it considers systems organized around data base and looks at systems from equipment level rather than from component level.

B77-10332

VECTOR SWEEP

C. L. MOUTRIE (Gen. Dyn. Corp.) and R. F. ONEILL (Gen. Dyn. Corp.)

Nov. 1977

LEWIS-12281

Vol. 2, No. 3, p. 415

Program is numerical procedure for calculating radiation/geometrical configuration factors and/or space-environmental heat-flux histories. System can accommodate complex systems of diverse geometric shapes residing in unlimited variety of mutual shadow conditions. Basic analytical device is finite-difference employment of unit-sphere method of calculating configuration factors.

B77-10333

PERT TIME III

Innovator not given (Systems Engineering Div., Langley Res. Cntr.) Nov. 1977

LANGLEY-11887

Vol. 2, No. 3, p. 416

System utilizing time oriented network structure is automated aid for monitoring and scheduling various activities within particular project. Program provides management with means to evaluate accurately status of project and helps control time, cost, and manpower.

B77-10334

DOCUMENT RETRIEVAL AND REPORTING

J. J. PERLOUCH, JR.

Nov. 1977

LEWIS-12401

Vol. 2, No. 3, p. 416

ASRES system of computer programs provides for acquisition, storage, retrieval and dissemination of information in form of bibliographic citations of technical documents. Persons with little or no computer experience can operate ASRES. System should be applicable to any definable body of technical literature consisting of up to 32,750 citations.

B77-10448

CALCULATING PARTS FACTORS FOR REDUNDANT SYSTEMS

W. L. DEROCHE, JR. (Martin Marietta Corp.)

Mar. 1978

M-FS-23413

Vol. 2, No. 4, p. 553

Method that is easily programmed simplifies calculation of parts factor. Individual module unreliabilities are computed as function of number of service intervals and service interval length. At each service interval, unreliability is sum of unreliabilities of replaced and original modules. It must be calculated for each module to obtain parts factor.

B77-10449

OBTAINING A TOMOGRAPHIC IMAGE FROM TRANSMISSION PROJECTIONS

R. C. HEYSER and R. NATHAN

Mar. 1978

NPO-13739

Vol. 2, No. 4, p. 554

Technique for obtaining tomographic images work directly in signal space and is used to find object configuration by simple summation of density values. Image is reconstructed by precise inverse of scanning. Signal values corresponding to density of projection are added as constant terms along line corresponding to original path between two probes that give rise to that density value.

B77-10450

IMAGE REGISTRATION USING BINARY BOUNDARY MAPS

J. F. ANDRUS, C. W. CAMPBELL, and R. R. JAYROE

Mar. 1978 See also NASA-TN-D-7607 (N74-19035)

M-FS-23043

Vol. 2, No. 4, p. 555

Registration technique that matches binary boundary maps extracted from raw data, rather than matching actual data, is considerably faster than other techniques. Boundary maps, which are digital representations of regions where image amplitudes change significantly, typically represent data compression of 60 to 70 percent. Maps allow average products to be computed with addition rather than multiplication, further reducing computation time.

B77-10451

DEFINING STRUCTURAL LIMIT ZONES

D. H. MERCHANT (Boeing Co.)

Mar. 1978

M-FS-23582

Vol. 2, No. 4, p. 556

Method for defining limit loads uses probability distribution of largest load occurring during given time intervals. Method is compatible with both deterministic and probabilistic structural design criteria. It also rationally accounts for fact that longer structure is exposed to random loading environment, greater is possibility that it will experience extreme load.

B77-10452

NONLINEAR FINITE ELEMENTS

R. E. JONES (Boeing Co.) and J. W. STRAAYER (Boeing Co.)

Mar. 1978 See also NASA CR-144276 (N76-22582)

M-FS-23664

Vol. 2, No. 4, p. 557

Comprehensive survey of past and current literature on geometrically-nonlinear finite elements is organized into handbook form and serves as valuable reference when solving problems in nonlinear structural mechanics. Handbook provides rapid access to wide variety of element types and facilitates evaluation of different elements as to their features, probable accuracy, and complexity.

B77-10453

WOLF CONTOURING AND PLOTTING PACKAGE

G. T. MASAKI and R. WILLIAMSON (Wolf Res. and Develop. Corp.)

Mar. 1978

GSFC-12326

Vol. 2, No. 4, p. 557

Tasks ranging from quick simple plot (which requires only one call to package) to highly sophisticated plots (including motion picture plots) easily generated with basic knowledge of FORTRAN and plot commands. Designers preparing software system that requires plotted output will find this package offers many advantages over standard hardware support packages available.

SUBJECT INDEX

Subject Index

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Anastigmatic three-mirror telescope
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ABLATION

Ablative liner locates hotspots
MSC-16981 B77-10405 06

ABLATIVE MATERIALS

Heat-moderating filler for intumescent coatings
ARC-11043 B77-10069 04

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NPO-13823 B77-10141 08

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Aircraft-noise synthesizer
LANGLEY-11858 B77-10028 02

Acoustic imaging system
NPO-13888 B77-10046 03

Differential sound-level meter
LANGLEY-12106 B77-10094 06

Ultrasonic-mammography apparatus
NPO-13935 B77-10207 05

Doppler techniques for measuring fluid velocities
M-FS-23289 B77-10279 03

ACOUSTICS

Differential sound-level meter
LANGLEY-12106 B77-10094 06

Ultrasonic detection of bearing defects
M-FS-23446 B77-10306 06

ACQUISITION

Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02

ACTIVATION

Carbon-chlorine-carbon sewage treatment
NPO-13972 B77-10167 03

ACTIVITY (BIOLOGY)

Biological-activity monitor
NPO-14089 B77-10208 05

ACTUATORS

Cost-effective actuator tester
MSC-16324 B77-10302 06

ADDITIVES

Low-cost solar-cell fabrication
NPO-13992 B77-10015 01

Growth of GaAs crystals
M-FS-23681 B77-10144 08

ADHESION

Single-Donor Leukophoretic Technique
MSC-16297 B77-10205 05

ADHESIVE BONDING

Pretreatment for strong aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04

Attaching strain gages by ultrasonic plastic welding
M-FS-23433 B77-10326 08

Improved silicone-rubber-to-silicon-rubber bonding
MSC-16419 B77-10389 04

Debonding agent for silicone-rubber adhesive
MSC-16933 B77-10390 04

Adhesiveless and grooveless sealing technique
LANGLEY-11779 B77-10444 08

ADHESIVES

Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06

Debonding agent for silicone-rubber adhesive
MSC-16933 B77-10390 04

ADSORPTION

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04

AERIAL PHOTOGRAPHY

Image registration using binary boundary maps
M-FS-23043 B77-10450 09

AERODYNAMIC BALANCE

Trim conditions of mated vehicles
MSC-16188 B77-10111 06

TRIM-STAB-Aerospace vehicle trim and stability
MSC-14927 B77-10114 06

AERODYNAMIC CONFIGURATIONS

Design and analysis of supersonic aircraft
LANGLEY-12237 B77-10422 06

AERODYNAMIC DRAG

Aircraft aerodynamics at high angles of attack
ARC-11133 B77-10225 06

AERODYNAMIC HEAT TRANSFER

Improved accuracy with phase-change paints
LANGLEY-12025 B77-10212 06

AERODYNAMIC STABILITY

Trim conditions of mated vehicles
MSC-16188 B77-10111 06

TRIM-STAB-Aerospace vehicle trim and stability
MSC-14927 B77-10114 06

AEROSOLS

Portable aerosol-particle counter
LEWIS-12130 B77-10278 03

AEROTHERMODYNAMICS

Atmospheric interaction plume
LANGLEY-12203 B77-10110 06

AIR CONDITIONING

Improving efficiency of existing air-conditioning
GSFC-12217 B77-10090 06

Absorption generator for solar-powered air-conditioner
M-FS-23417 B77-10091 06

Solar-powered air-conditioning
M-FS-23276 B77-10106 06

Modular test system for solar collectors
M-FS-23701 B77-10173 03

AIR CONDITIONING EQUIPMENT

Window-mounted auxiliary solar heater
M-FS-23719 B77-10277 03

AIR LAUNCHING

Rotating mobile launcher
ARC-10979 B77-10120 07

AIR POLLUTION

- Portable mass spectrometer
 NPO-13664 B77-10043 03
 Beam-splitter for infrared detection of pollutants
 LANGLEY-12073 B77-10054 03
 Dust-contamination monitor
 M-FS-23702 B77-10272 03
 Portable aerosol-particle counter
 LEWIS-12130 B77-10278 03

AIR QUALITY

- Dust-contamination monitor
 M-FS-23702 B77-10272 03
 Airborne atmospheric sampling system
 LEWIS-12949 B77-10380 03
 Detection of hydrogen chloride gas in air
 LANGLEY-12218 B77-10395 04

AIR SAMPLING

- Four-D global reference atmosphere
 M-FS-23336 B77-10066 03
 Airborne atmospheric sampling system
 LEWIS-12949 B77-10380 03

AIR TRAFFIC CONTROL

- Analysis of aircraft motions
 ARC-11132 B77-10307 06

AIRCRAFT ACCIDENT INVESTIGATION

- Analysis of aircraft motions
 ARC-11132 B77-10307 06

AIRCRAFT DESIGN

- Aircraft aerodynamics at high angles of attack
 ARC-11133 B77-10225 06
 Automated predesign of aircraft
 LANGLEY-12258 B77-10418 06
 Design and analysis of supersonic aircraft
 LANGLEY-12237 B77-10422 06

AIRCRAFT ENGINES

- Aircraft engine weight and dimensions
 LEWIS-12741 B77-10116 06

AIRCRAFT LAUNCHING DEVICES

- Rotating mobile launcher
 ARC-10979 B77-10120 07

AIRCRAFT NOISE

- Aircraft-noise synthesizer
 LANGLEY-11858 B77-10028 02

AIRCRAFT PERFORMANCE

- Aircraft engine weight and dimensions
 LEWIS-12741 B77-10116 06

AIRCRAFT STABILITY

- Trim conditions of mated vehicles
 MSC-16188 B77-10111 06

AIRCRAFT SURVIVABILITY

- Calculating parts factors for redundant systems
 M-FS-23413 B77-10448 09

AIRCRAFT WAKES

- Optical scanning system for laser velocimeter
 LANGLEY-12143 B77-10269 03

ALGORITHMS

- Programmable convolution via the chirp Z-transform with CCD's
 LANGLEY-12109 B77-10327 09
 Edge-following algorithm for tracking geological features
 LANGLEY-12051 B77-10328 09

ALIGNMENT

- Alignment tool for X-ray image intensifiers
 ARC-11017 B77-10400 05

ALKALINE BATTERIES

- Flexible separator for alkaline batteries
 LEWIS-12649 B77-10002 01
 Rechargeable nickel-zinc batteries
 LEWIS-12784 B77-10003 01

ALKENES

- Flame and acid resistant polyimide fibers
 MSC-16074 B77-10282 04

ALLOYS

- Controlling stress-corrosion cracking
 M-FS-23416 B77-10200 04
 Simplified systematic production of graphite/polyimide prepreg
 LANGLEY-12266 B77-10393 04

ALUMINUM

- Impact-resistant boron/aluminum composites
 LEWIS-12472 B77-10184 04
 Pretreatment for strong aluminum/epoxy/aluminum bonds
 GSFC-12232 B77-10195 04

ALUMINUM ALLOYS

- Technology of welding aluminum alloys-I
 MSC-18081 B77-10431 08
 Technology of welding aluminum alloys-II
 MSC-18082 B77-10432 08
 Technology of welding aluminum alloys-III
 MSC-18083 B77-10433 08
 Technology of welding aluminum alloys-IV
 MSC-18084 B77-10434 08

AMMONIA

- Ammonia-compatible elastomers and alloys
 MSC-16559 B77-10394 04

AMMONIUM PERCHLORATES

- Obtaining ultradry crystalline solids
 NPO-13618 B77-10199 04

AMPLIFICATION

- Gain and Phase-margin measurements
 NPO-13296 B77-10025 02

AMPLIFIER DESIGN

- Differential current driver
 MSC-16475 B77-10343 01
 Charge-coupled differential amplifier
 LANGLEY-12110 B77-10349 01
 Improving FM transmitter power and efficiency
 M-FS-23517 B77-10360 02

AMPLIFIERS

- Bidirectional Amplifier
 KSC-10856 B77-10150 01

ANALGESIA

- Aspirin/metiamide reduces stomach ulceration
 ABC-11038 B77-10206 05

ANALOG DATA

- Bidirectional Amplifier
 KSC-10856 B77-10150 01

ANALOG TO DIGITAL CONVERTERS

- Data acquisition for solar and wind energy
 NPO-13908 B77-10146 09
 Inexpensive pulse-train converter measures analog voltage
 LEWIS-12912 B77-10248 01
 Rate-of-change limiter for quantized signals
 M-FS-16406 B77-10362 02

ANALYZERS

- Thermal hydraulic analyzer
 MSC-16797 B77-10419 06

ANEMOMETERS

- Low-power anemometer
 LANGLEY-11473 B77-10103 06
 Multipurpose miniature drag-force anemometer
 LEWIS-12790 B77-10402 06

ANGIOGRAPHY

- Real-time video display for angiographic studies
 ARC-10985 B77-10293 05

ANGLES (GEOMETRY)

- Angle-indicating digital servo
 ARC-11036 B77-10024 02

ANGULAR RESOLUTION

- Angle-indicating digital servo
 ARC-11036 B77-10024 02
 Mass spectrometer has wide angular acceptance
 NPO-14111 B77-10170 03

ANGULAR VELOCITY

- A spin-motor rotation detector
 GSFC-11953 B77-10007 01
 Electronic shaft-angle encoder
 LEWIS-12832 B77-10351 01
 Brushless tachometer gives speed and direction
 M-FS-23175 B77-10353 01

ANNEALING

- Fast measurement of MOS capacitors
 NPO-13892 B77-10020 01

ANODES

- Anodic growth of niobium oxide
 M-FS-23150 B77-10201 04

ANODIC COATINGS

- Anodic growth of niobium oxide
 M-FS-23150 B77-10201 04

ANODIZING

- Anodization improves GaAs solar cell performance
 LANGLEY-12164 B77-10336 01

ANTENNA ARRAYS

- 'Printed-circuit' rectenna
 NPO-13886 B77-10261 02

ANTENNA COUPLERS

- Accurate RF field monitoring in shielded enclosure
 MSC-16325 B77-10096 06

ANTENNA DESIGN

- Emergency-vehicle VHF antenna
 M-FS-23638 B77-10263 02

ANTENNAS

- Dual-purpose laboratory cage/antenna
 LANGLEY-11587 B77-10086 05

ANTIHTAMINICS

- Aspirin/metiamide reduces stomach ulceration
 ABC-11038 B77-10206 05

ANTIMONY ALLOYS

- Homogeneous eutectic of Pb-Sb
 M-FS-23766 B77-10385 04

ANTIREFLECTION COATINGS

- Humidity-resistant black-nickel coatings
 M-FS-23650 B77-10077 04
 Solar meter with silicon photocell
 NPO-14136 B77-10243 01
 Low-reflection silicon solar cells
 LEWIS-12418 B77-10318 08
 Anodization improves GaAs solar cell performance
 LANGLEY-12164 B77-10336 01

APERTURES

- Modular multiapertures for light sensors
 M-FS-23249 B77-10321 08

APPROACH CONTROL

- Spectrally-balanced chromatic approach-lighting system
 ARC-10990 B77-10060 03

APPROXIMATION

- Determining critical temperatures and volumes
 NPO-13405 B77-10070 04

- Determining viscosities of liquids
NPO-13406 B77-10071 04
- Design of minimum-weight structures
LANGLEY-12209 B77-10310 06
- Determining minimum lubrication film for machine parts
LEWIS-12885 B77-10415 06
- ARC WELDING**
Wetting agent for stud welding
M-FS-23545 B77-10126 08
Adaptive control for weld skate
M-FS-23620 B77-10127 07
Arc-starting aid for GTA welding
MSC-19495 B77-10322 08
- ARSENIC**
MIS diode structure in As+-implanted CdS
LANGLEY-12156 B77-10159 01
- ASSAYING**
Whole-rock uranium analysis by fission-track activation
NPO-13483 B77-10383 04
- ASSEMBLING**
Cable-clamp installation tool
NPO-13976 B77-10439 08
- ASTRONOMICAL TELESCOPES**
Anastigmatic three-mirror telescope
M-FS-23675 B77-10373 03
- ATMOSPHERIC MODELS**
Four-D global reference atmosphere
M-FS-23336 B77-10066 03
- ATMOSPHERIC MOISTURE**
Improved dewpoint-probe calibration
MSC-16811 B77-10406 06
- ATOMIC BEAMS**
Negative deuterium-ion source
NPO-14113 B77-10378 03
- ATTITUDE CONTROL**
Autonomous rendezvous and feature detection system using TV imagery
LANGLEY-12050 B77-10356 02
Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02
- AUDIO EQUIPMENT**
Combined PAM/PCM audio switching system
KSC-11015 B77-10029 02
Double-duty loudspeaker
MSC-16263 B77-10254 01
- AUDIO FREQUENCIES**
Aircraft-noise synthesizer
LANGLEY-11858 B77-10028 02
- AUDIOLOGY**
Hearing-aid tester
MSC-14916 B77-10287 05
- AUDITORY DEFECTS**
Hearing-aid tester
MSC-14916 B77-10287 05
- AUTOCORRELATION**
Three-level signal sampler has automatic threshold
NPO-14042 B77-10157 01
- AUTOMATIC CONTROL**
Demand-controlled lighting
KSC-11010 B77-10023 02
Vapor-modulated heat pipe for improved temperature control
ARC-11001 B77-10412 06
- AUTOMATIC CONTROL VALVES**
Automatic channel trimming for control systems: A concept
MSC-16027 B77-10161 02
Cost-effective actuator tester
MSC-16324 B77-10302 06
- Direct-heating solar-collector dump valve
M-FS-23679 B77-10367 03
Vapor-modulated heat pipe for improved temperature control
ARC-11001 B77-10412 06
- AUTOMATIC FREQUENCY CONTROL**
Improving FM transmitter power and efficiency
M-FS-23517 B77-10360 02
- AUTOMATIC TEST EQUIPMENT**
Optical integrated-circuit tester
NPO-13282 B77-10098 06
Cost-effective actuator tester
MSC-16324 B77-10302 06
- AUTOMOBILE ENGINES**
Nickel-copper-zirconium alloy for catalytic creactors
LEWIS-12245 B77-10188 04
- AUTOMOBILES**
Rechargeable nickel-zinc batteries
LEWIS-12784 B77-10003 01
- B**
- BACTERIA**
Bacteria/virus filter membrane
MSC-16388 B77-10204 05
- BACTERIOPHAGES**
Virus detection system
MSC-16098 B77-10203 05
- BAFFLES**
Absorption generator for solar-powered air-conditioner
M-FS-23417 B77-10091 06
- BALL BEARINGS**
Restoration of bearings
LEWIS-12631 B77-10323 08
- BANDPASS FILTERS**
Digital filter for voiceband noise
M-FS-23699 B77-10022 01
Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01
Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01
- BANDWIDTH**
Differential pulse-code modulation
MSC-12506 B77-10027 02
Distortion in AM-baseband telemetry
M-FS-22180 B77-10034 02
- BATTERY CHARGERS**
Battery peak-charge voltage monitor
LANGLEY-11978 B77-10001 01
Multichannel implantable telemetry system
ARC-11079 B77-10288 05
- BEAM LEADS**
Detecting wire-bond failures
M-FS-23584 B77-10131 08
Bonding aluminum beam leads
M-FS-23183 B77-10443 08
- BEAM SPLITTERS**
Beam-splitter for infrared detection of pollutants
LANGLEY-12073 B77-10054 03
- BEAMS (SUPPORTS)**
Foldable beam
LANGLEY-12077 B77-10424 07
- BEARINGS**
Heat pipe controls bearing temperature
LANGLEY-11846 B77-10227 07
Magnetically-controlled bearing lubrication
M-FS-23009 B77-10231 07
- Ultrasonic detection of bearing defects
M-FS-23446 B77-10306 06
- BENDING**
Allowable bending loads for mechanical fasteners
M-FS-23430 B77-10297 06
- BENDING FATIGUE**
Automated predesign of aircraft
LANGLEY-12258 B77-10418 06
- BENDING MOMENTS**
Finite-element structural analysis
MSC-16320 B77-10148 09
Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06
- BERYLLIUM**
Isothermal Optical system
GSFC-12059 B77-10053 03
- BIBLIOGRAPHIES**
Document retrieval and reporting
LEWIS-12401 B77-10334 09
- BINARY CODES**
Changing NRZ data to biphasic logic
MSC-16688 B77-10268 02
- BINARY DATA**
'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01
- BINARY DIGITS**
Efficient bit-error detecting code
KSC-11039 B77-10363 02
- BINARY MIXTURES**
Solubility-parameter 'spectroscopy'
NPO-13829 B77-10073 04
- BIOACOUSTICS**
Hearing-aid tester
MSC-14916 B77-10287 05
- BIOASSAY**
Portable mass spectrometer
NPO-13664 B77-10043 03
Porous poly-HEMA bead synthesis
NPO-13383 B77-10075 04
Isoelectric leukocyte focusing
M-FS-23271 B77-10084 05
- BIOENGINEERING**
Percutaneous and skeletal biocarbon implants
M-FS-23666 B77-10089 05
- BIOINSTRUMENTATION**
Skin-implant multiwire connector
KSC-11030 B77-10082 05
Dual-purpose laboratory cage/antenna
LANGLEY-11587 B77-10086 05
Batteryless implanted echosonometer
ARC-11035 B77-10289 05
- BIO MEDICAL DATA**
Multichannel implantable telemetry system
ARC-11079 B77-10288 05
Batteryless implanted echosonometer
ARC-11035 B77-10289 05
Real-time video display for angiocardiographic studies
ARC-10985 B77-10293 05
- BIOMETRICS**
Skin-implant multiwire connector
KSC-11030 B77-10082 05
Simultaneous EKG and ultrasonoscope display
ARC-11137 B77-10088 05
Percutaneous and skeletal biocarbon implants
M-FS-23666 B77-10089 05
Acquisition system for biomedical data
MSC-16144 B77-10209 05
Multichannel implantable telemetry system
ARC-11079 B77-10288 05

- Batteryless implanted echosonometer
ARC-11035 B77-10289 05
- BIOTELEMETRY**
Dual-purpose laboratory cage/antenna
LANGLEY-11587 B77-10086 05
Multichannel implantable telemetry system
ARC-11079 B77-10288 05
Biotelemetry system for ambulatory patients
ARC-11142 B77-10401 05
- BIREFRINGENCE**
Electrically-controlled variable-color optical filters
MSC-14944 B77-10049 03
- BIREFRINGENT COATINGS**
Electrically-controlled variable-color optical filters
MSC-14944 B77-10049 03
- BISTABLE CIRCUITS**
Digital-signal transfer between isolated systems
MSC-16508 B77-10344 01
- BLACK AND WHITE PHOTOGRAPHY**
Microcircuit photography technique
GSFC-12199 B77-10134 08
- BLACK BODY RADIATION**
Electromagnetic power absorber
NPO-13830 B77-10174 03
Active-cavity radiometer/pyroheliometer
NPO-13819 B77-10176 03
- BLAST DEFLECTORS**
Protection against explosive blasts
LANGLEY-12014 B77-10219 06
- BLAST LOADS**
Protection against explosive blasts
LANGLEY-12014 B77-10219 06
- BLOOD**
Isoelectric leukocyte focusing
M-FS-23271 B77-10084 05
- BLOWERS**
Improving efficiency of existing air-conditioning
GSFC-12217 B77-10090 06
- BOILERS**
Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03
- BOILING**
Liquid-hydrogen boiloff reliquifier
KSC-11021 B77-10057 03
- BOLTS**
Allowable bending loads for mechanical fasteners
M-FS-23430 B77-10297 06
- BONDING**
Detecting wire-bond failures
M-FS-23584 B77-10131 08
Pretreatment for strong aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04
Welding single-crystal silicon to molybdenum
NPO-13735 B77-10341 01
Vacuum soldering a metalized ceramic to a metal carrier
NPO-14037 B77-10435 08
- BOOMS (EQUIPMENT)**
Overhead-handling, universal-positioning device
M-FS-23434 B77-10312 07
- BORING MACHINES**
Plaster core washout tool
MSC-16635 B77-10314 07
- BORON**
Impact-resistant boron/aluminum composites
LEWIS-12472 B77-10184 04
- BORON REINFORCED MATERIALS**
Impact-resistant boron/aluminum composites
LEWIS-12472 B77-10184 04
- BOROSILICATE GLASS**
High-temperature glass and glass coatings
ARC-11051 B77-10067 04
- BOTTLES**
Drug-dosage indicator
GSFC-12139 B77-10210 05
- BOUNDARY LAYER FLOW**
Compressible laminar boundary-layer flow
LANGLEY-12254 B77-10423 06
- BOUNDARY LAYER TRANSITION**
Compressible laminar boundary-layer flow
LANGLEY-12254 B77-10423 06
- BOURDON TUBES**
High-pressure high-temperature transducer
M-FS-23765 B77-10181 03
Prosthetic urinary sphincters
M-FS-23717 B77-10290 05
- BOX BEAMS**
Automated predesign of aircraft
LANGLEY-12258 B77-10418 06
- BRAZING**
Vacuum soldering a metalized ceramic to a metal carrier
NPO-14037 B77-10435 08
- BREMSSTRAHLUNG**
Radiation shielding methods
NPO-13923 B77-10065 03
- BREWSTER ANGLE**
Electromagnetic power absorber
NPO-13830 B77-10174 03
- BRIGHTNESS**
Demand-controlled lighting
KSC-11010 B77-10023 02
- BROADBAND AMPLIFIERS**
Improving FM transmitter power and efficiency
M-FS-23517 B77-10360 02
- BUBBLE TECHNIQUE**
Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01
- BUCKLING**
Dynamic stability of multilayer sandwich plates
NPO-11625 B77-10108 06
- BURNERS**
Fuel burner with low nitrogen oxide formation
NPO-13958 B77-10218 06
- BURNING RATE**
Mathematical model of fires
NPO-13950 B77-10145 09
- BUS CONDUCTORS**
Low-inductance bus lines
MSC-16730 B77-10257 01
Circuit monitors powerline interruptions
MSC-16763 B77-10346 01
- BUSHINGS**
Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
- BUTT JOINTS**
Inspection tool for butt-welded tubing
NPO-13975 B77-10235 08
- Linear dimension establishes weld integrity
NPO-13977 B77-10436 08
Tube-weld inspection tool
NPO-13978 B77-10437 08
- C**
- CABIN ATMOSPHERES**
Removing CO2 and moisture from air
MSC-14771 B77-10092 06
- CABLES**
Low-inductance bus lines
MSC-16730 B77-10257 01
- CADMIUM SULFIDES**
MIS diode structure in As+-implanted CdS
LANGLEY-12156 B77-10159 01
- CALIBRATING**
Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06
Calibration faceplate for x-ray image intensifiers
ARC-11146 B77-10399 05
Improved dewpoint-probe calibration
MSC-16811 B77-10406 06
- CANS**
No-spill touchup paint container
MSC-16269 B77-10428 07
- CAPACITANCE**
Circuit regulates voltage of dc-dc converter
LEWIS-12791 B77-10345 01
- CAPACITIVE FUEL GAGES**
Cryogenic liquid-level detector
M-FS-23253 B77-10410 06
- CAPACITORS**
Fast measurement of MOS capacitors
NPO-13892 B77-10020 01
Low-loss energy storage flywheel
GSFC-12030 B77-10118 07
Record dielectric breakdown automatically
NPO-13599 B77-10216 06
Capacitive connectors for digital-data lines
GSFC-12238 B77-10250 01
Low-insertion-resistance current monitor
GSFC-12278 B77-10258 01
- CAPILLARY FLOW**
Apparatus for determining surface tension
NPO-13294 B77-10408 06
- CAPILLARY TUBES**
Single-Donor Leukophoretic Technique
MSC-16297 B77-10205 05
Apparatus for determining surface tension
NPO-13294 B77-10408 06
- CARBON**
Percutaneous and skeletal biocarbon implants
M-FS-23666 B77-10089 05
Carbon-chlorine-carbon sewage treatment
NPO-13972 B77-10167 03
- CARBON MONOXIDE**
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
- CARDIOGRAPHY**
Acquisition system for biomedical data
MSC-16144 B77-10209 05

- Real-time video display for
angiocardigraphic studies
ARC-10985 B77-10293 05
- CARDIOLOGY**
Batteryless implanted echosonometer
ARC-11035 B77-10289 05
Real-time video display for
angiocardigraphic studies
ARC-10985 B77-10293 05
- CARDIOVASCULAR SYSTEM**
Simultaneous EKG and ultrasonoscope
display
ARC-11137 B77-10088 05
Acquisition system for biomedical data
MSC-16144 B77-10209 05
- CARRIAGES**
High gantry for lifting and handling
GSFC-12235 B77-10316 07
- CARRIER WAVES**
Simplified command and range detection
system
NPO-13753 B77-10026 02
- CARTRIDGES**
Quick-disconnect coupling/filter
M-FS-22323 B77-10228 07
Cartridge getter for vacuum jacketing
MSC-16610 B77-10230 07
- CASTS**
Plaster core washout tool
MSC-16635 B77-10314 07
- CATALYSTS**
Nickel-copper-zirconium alloy for
catalytic reactors
LEWIS-12245 B77-10188 04
Metal/polyvinyl pyridine catalytic beads
NPO-13912 B77-10384 04
- CATAPULTS**
Rotating mobile launcher
ARC-10979 B77-10120 07
- CATHODE RAY TUBES**
Rotating-vector TV cursor
MSC-16119 B77-10055 03
Thermal hydraulic analyzer
MSC-16797 B77-10419 06
- CAVITIES**
Miniature diaphragm valve for medical
equipment
LANGLEY-11775 B77-10398 05
- CAVITY RESONATORS**
Changing sunlight to microwaves: A
concept
NPO-14068 B77-10262 02
- CELLULOSE**
Control of electro-osmotic flow
M-FS-23554 B77-10283 04
- CENTRAL PROCESSING UNITS**
Priority protocol and control circuit
NPO-13901 B77-10030 02
- CERMETS**
Radiation-resistant, electrically insulating
cermet
NPO-13120 B77-10189 04
Oxidation-resistant cermet
NPO-13666 B77-10190 04
Stress, corrosion, and heat resistant
cermet
NPO-13690 B77-10191 04
Vacuum soldering a metalized ceramic
to a metal carrier
NPO-14037 B77-10435 08
- CESIUM IODIDES**
Properties of doped cesium iodide
crystals
M-FS-23148 B77-10202 04
- CHANNEL MULTIPLIERS**
Circuit regulates voltage of dc-dc
converter
LEWIS-12791 B77-10345 01
- CHANNELS (DATA TRANSMISSION)**
Priority protocol and control circuit
NPO-13901 B77-10030 02
Multiplexed fiber-optic transmission
system
KSC-11047 B77-10164 02
Reliability analysis for data management
systems
M-FS-23208 B77-10331 09
- CHARGE COUPLED DEVICES**
Programmable convolution via the chirp
Z-transform with CCD's
LANGLEY-12109 B77-10327 09
Charge-coupled differential amplifier
LANGLEY-12110 B77-10349 01
- CHARGED PARTICLES**
Radiation shielding methods
NPO-13923 B77-10065 03
Mass spectrometer has wide angular
acceptance
NPO-14111 B77-10170 03
- CHASSIS**
Honeycomb chassis for electronic
components
NPO-13891 B77-10237 08
- CHEMICAL ANALYSIS**
Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03
- CHEMICAL BONDS**
Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03
- CHEMICAL PROPERTIES**
Solubility-parameter 'spectroscopy'
NPO-13829 B77-10073 04
- CHEMICAL REACTIONS**
Low-temperature coal desulfurization
NPO-13937 B77-10166 03
Preparation of organosiloxy-molybdenum
monomer
M-FS-23704 B77-10185 04
Preparation of zinc orthotitanate
M-FS-23345 B77-10186 04
- CHEMICAL REACTORS**
Nickel-copper-zirconium alloy for
catalytic reactors
LEWIS-12245 B77-10188 04
- CHEMILUMINESCENCE**
Simplified ozone detection by
chemiluminescence
LANGLEY-11405 B77-10280 04
Detection of hydrogen chloride gas in
air
LANGLEY-12218 B77-10395 04
- CHIRP**
Programmable convolution via the chirp
Z-transform with CCD's
LANGLEY-12109 B77-10327 09
- CHLORIDES**
Low-temperature coal desulfurization
NPO-13937 B77-10166 03
- CHLORINATION**
Carbon-chlorine-carbon sewage
treatment
NPO-13972 B77-10167 03
- CHLORINE**
Carbon-chlorine-carbon sewage
treatment
NPO-13972 B77-10167 03
- CHLORINE COMPOUNDS**
Carbon-chlorine-carbon sewage
treatment
NPO-13972 B77-10167 03
- CHLOROPRENE RESINS**
Liquid-oxygen compatible,
flame-resistant coating.
KSC-11020 B77-10192 04
- CHROMATOGRAPHY**
Porous poly-HEMA bead synthesis
NPO-13383 B77-10075 04
- CHROMIUM ALLOYS**
Paralinear oxidation behavior
LEWIS-12677 B77-10081 04
Effects of hydrogen on
iron/nickel/cobalt/alloy
M-FS-23369 B77-10285 04
- CIRCUIT BOARDS**
Honeycomb chassis for electronic
components
NPO-13891 B77-10237 08
Electrically-nonlinear composite material
NPO-13858 B77-10284 04
Process sharpens micrographic images
MSC-16846 B77-10374 03
- CIRCUIT BREAKERS**
Versatile solid-state relay
M-FS-23632 B77-10247 01
- CIRCUIT DIAGRAMS**
Mask and display program
M-FS-23625 B77-10355 01
- CIRCUIT PROTECTION**
Lightning-activated electrical ground for
cable shields
MSC-12745 B77-10019 01
- CIRCUITS**
Bridge/amplifier configuration for
switched arrays
LANGLEY-11652 B77-10009 01
Connector with cable-to-chassis strain
relief
GSFC-12164 B77-10016 01
Low-inductance bus lines
MSC-16730 B77-10257 01
Low-insertion-resistance current
monitor
GSFC-12278 B77-10258 01
- CLAMPING CIRCUITS**
Rate-of-change limiter for quantized
signals
M-FS-16406 B77-10362 02
- CLAMPS**
Cable-clamp installation tool
NPO-13976 B77-10439 08
Positioning bars for large wire
harnesses
MSC-16420 B77-10440 08
Cast-in-place grommets for honeycomb
substrates
NPO-13868 B77-10445 08
- CLASSIFICATIONS**
Automated process planning system
ARC-11145 B77-10447 08
- CLASSIFIERS**
Classification accuracy improvement
LANGLEY-12102 B77-10329 09
- CLEANERS**
Collectors for vacuum-cleaning lines
MSC-17011 B77-10142 08
- CLEANING**
Space-age vacuum cleaning
NPO-14008 B77-10442 08
- CLIPPER CIRCUITS**
Rate-of-change limiter for quantized
signals
M-FS-16406 B77-10362 02
- CLOCKS**
Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01

CLOSED CYCLES

- Closed-cycle refrigerator for masers
NPO-13839 B77-10056 03
Closed-cycle hydrogen-fueled engine
NPO-13763 B77-10119 07

CLOTHING

- Liquid-circulating garment controls
thermal balance
MSC-16727 B77-10294 05

CLOUD CHAMBERS

- Simplified sensing for cloud chamber
MSC-14708 B77-10058 03
Fast-response cloud chamber
M-FS-23588 B77-10275 03

CLOUD PHOTOGRAPHY

- Image registration using binary boundary
maps
M-FS-23043 B77-10450 09

COAL

- Low-temperature coal desulfurization
NPO-13937 B77-10166 03
Screw-extruded coal
NPO-13769 B77-10382 04

COAL GASIFICATION

- Screw-extruded coal
NPO-13769 B77-10382 04

COAL LIQUEFACTION

- Screw-extruded coal
NPO-13769 B77-10382 04

COATING

- Pretreatment for strong
aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04
Vacuum-assisted impregnation of
materials
MSC-16785 B77-10317 08
Potting procedure for electronic
components
MSC-16290 B77-10324 08

COATINGS

- Improved intumescent coating
ARC-11042 B77-10068 04
Heat-moderating filler for intumescent
coatings
ARC-11043 B77-10069 04
Preparation of organosiloxo-molybdenum
monomer
M-FS-23704 B77-10185 04
Pretreatment for strong
aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04
Improved accuracy with phase-change
paints
LANGLEY-12025 B77-10212 06
Uniform spray coating for large tanks
M-FS-23097 B77-10325 08

COAXIAL CABLES

- Twisted shield-pair transmission line
MSC-16702 B77-10352 01

CODERS

- Differential pulse-code modulation
MSC-12506 B77-10027 02

CODING

- Priority protocol and control circuit
NPO-13901 B77-10030 02
Shrink tubing identifier
MSC-16430 B77-10130 08
Secure communications system
MSC-16462 B77-10162 02
Changing NRZ data to biphasic logic
MSC-16688 B77-10268 02
Electronic shaft-angle encoder
LEWIS-12832 B77-10351 01
Automated process planning system
ARC-11145 B77-10447 08

COHESION

- Measurement of friction and wear
LEWIS-12910 B77-10429 07

COLD TRAPS

- Radioactive-gas separation technique
GSFC-12019 B77-10169 03

COLLOCATION

- Floating nut for spacecraft application
M-FS-23248 B77-10427 07

COLOR PHOTOGRAPHY

- Laser produces color images from digital
data
GSFC-12198 B77-10271 03

COLOR TELEVISION

- Field-of-view divider
MSC-16106 B77-10050 03

COMBUSTION CHAMBERS

- Engine injectors
LEWIS-12846 B77-10222 06
Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07
Ablative liner locates hotspots
MSC-16981 B77-10405 06

COMBUSTION TEMPERATURE

- Fuel burner with low nitrogen oxide
formation
NPO-13958 B77-10218 06

COMMUNICATION

- Secure communications system
MSC-16462 B77-10162 02

COMMUNICATION CABLES

- Connector with cable-to-chassis strain
relief
GSFC-12164 B77-10016 01
Lightning-activated electrical ground for
cable shields
MSC-12745 B77-10019 01
Low-inductance bus lines
MSC-16730 B77-10257 01
Twisted shield-pair transmission line
MSC-16702 B77-10352 01

COMMUNICATION EQUIPMENT

- Dual-purpose laboratory cage/antenna
LANGLEY-11587 B77-10086 05
Secure communications system
MSC-16462 B77-10162 02
Versatile communications terminal
MSC-16823 B77-10397 05

COMMUNICATION SATELLITES

- Emergency-vehicle VHF antenna
M-FS-23638 B77-10263 02
Satellite-based interference analyzer
GSFC-12150 B77-10264 02

COMMUTATION

- Commutator assembly technique
LANGLEY-11844 B77-10132 08

COMMUTATORS

- Commutator assembly technique
LANGLEY-11844 B77-10132 08
Gearless speed-reduction motor
GSFC-12138 B77-10311 07

COMPARATORS

- Three-level signal sampler has automatic
threshold
NPO-14042 B77-10157 01

COMPENSATORY TRACKING

- Inexpensive high-temperature solar
collector
NPO-13979 B77-10178 03

COMPONENT RELIABILITY

- Life-test methodology for mechanical
components
M-FS-23082 B77-10095 06
Low-resistance contacts for
GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01

Choosing the right connector

- M-FS-23785 B77-10354 01
Disconnects, couplings, fittings, fixed
joints, and seals
LEWIS-12948 B77-10430 07

COMPOSITE MATERIALS

- High-temperature glass and glass
coatings
ARC-11051 B77-10067 04
Improved processability of addition
polyimides
LANGLEY-12054 B77-10078 04
Annular momentum-control device
LANGLEY-11914 B77-10117 07
Method of laminating using a pneumatic
anvil
LANGLEY-11850 B77-10135 08
Rigidified inflatable structures
MSC-16069 B77-10136 08
Rotation molding of flywheels
M-FS-23674 B77-10137 08
Impact-resistant boron/aluminum
composites
LEWIS-12472 B77-10184 04
Electrically-nonlinear composite material
NPO-13858 B77-10284 04
Ultrasonic strength evaluation of
fiber-reinforced composites
LEWIS-12769 B77-10386 04

COMPOSITE STRUCTURES

- Extruded edge members for
honeycombs
MSC-16428 B77-10238 08

COMPOUNDING

- Preparation of zinc orthotitanate
M-FS-23345 B77-10186 04

COMPRESSED AIR

- Method of laminating using a pneumatic
anvil
LANGLEY-11850 B77-10135 08

COMPRESSIBILITY

- Compressibility measurement of
fluid-system ullage
MSC-16640 B77-10299 06

COMPUTER GRAPHICS

- Shuttle avionics visual display
MSC-16591 B77-10241 09
Mask and display program
M-FS-23625 B77-10355 01

COMPUTER STORAGE DEVICES

- Bias-field equalizer for bubble
memories
M-FS-23189 B77-10253 01

COMPUTERIZED DESIGN

- Defining structural limit zones
M-FS-23582 B77-10451 09

COMPUTERIZED SIMULATION

- Fluid-line math model
MSC-16230 B77-10223 06
Optimizing simulated trajectories
LANGLEY-12089 B77-10420 06

CONCENTRATORS

- High-performance flat-plate solar
collector
NPO-13883 B77-10035 03
Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03
Solar-power mountain concept
NPO-13861 B77-10177 03
Inexpensive high-temperature solar
collector
NPO-13979 B77-10178 03

CONDENSERS (LIQUIFIERS)

- Liquid-hydrogen boiloff reliquifier
KSC-11021 B77-10057 03

CONDUCTIVE HEAT TRANSFER

Isothermal Optical system

GSFC-12059 B77-10053 03

Resilient thermal barrier for high

temperatures

MSC-16338 B77-10198 04

CONDUCTORS

Connector with cable-to-chassis strain

relief

GSFC-12164 B77-10016 01

Capacitive connectors for digital-data

lines

GSFC-12238 B77-10250 01

CONICAL NOZZLES

Heavy-duty sandblast nozzle

NPO-13823 B77-10141 08

CONNECTORS

Skin-implant multiwire connector

KSC-11030 B77-10082 05

Fluid-connector selection

M-FS-23072 B77-10109 06

Quick-disconnect coupling/filter

M-FS-22323 B77-10228 07

Choosing the right connector

M-FS-23785 B77-10354 01

CONSTRUCTION

Floating nut for spacecraft application

M-FS-23248 B77-10427 07

CONTACT RESISTANCE

Low-resistance contacts for

GaAlAs/GaAs cells

LANGLEY-12201 B77-10339 01

CONTAINERLESS MELTS

The processing of materials in outer

space

M-FS-23695 B77-10240 08

CONTAMINANTS

Eliminate gas-entrained dirt from shaft

seals

LEWIS-11855 B77-10124 07

Quantitative measurement of surface

contamination

M-FS-16679 B77-10217 06

Dust-contamination monitor

M-FS-23702 B77-10272 03

CONTAMINATION

Quantitative measurement of surface

contamination

M-FS-16679 B77-10217 06

CONTOURS

WOLF contouring and plotting package

GSFC-12326 B77-10453 09

CONTROL

Primary-controlled ac-to-dc power

converter

M-FS-23198 B77-10342 01

Improved numerical control of oscillator

frequency

MSC-16747 B77-10347 01

CONTROL EQUIPMENT

Automatic channel trimming for control

systems: A concept

MSC-16027 B77-10161 02

Compact reliable multi-axis pivot

M-FS-23311 B77-10211 05

CONTROL UNITS (COMPUTERS)

Reliability analysis for data management

systems

M-FS-23208 B77-10331 09

Mask and display program

M-FS-23625 B77-10355 01

CONTROL VALVES

Direct-heating solar-collector dump

valve

M-FS-23679 B77-10367 03

Miniature diaphragm valve for medical

equipment

LANGLEY-11775 B77-10398 05

CONTROLLED ATMOSPHERES

Improving efficiency of existing

air-conditioning

GSFC-12217 B77-10090 06

CONTROLLED FUSION

Negative deuterium-ion source

NPO-14113 B77-10378 03

CONTROLLERS

Cost-effective actuator tester

MSC-16324 B77-10302 06

CONVECTION CURRENTS

Effects of oscillating magnetic fields on

liquids

M-FS-15235 B77-10063 03

CONVECTIVE HEAT TRANSFER

Heat-dissipating aluminum wire

M-FS-24274 B77-10438 08

CONVEYORS

Monorail for production handling of large

parachutes

KSC-11042 B77-10139 08

CONVOLUTION INTEGRALS

Programmable convolution via the chirp

Z-transform with CCD's

LANGLEY-12109 B77-10327 09

COOLING

Heat pipe controls bearing temperature

LANGLEY-11846 B77-10227 07

COOLING SYSTEMS

Closed-cycle refrigerator for masers

NPO-13839 B77-10056 03

Improving efficiency of existing

air-conditioning

GSFC-12217 B77-10090 06

Multiple-compartment venting

M-FS-23581 B77-10112 06

Heat pipe controls bearing temperature

LANGLEY-11846 B77-10227 07

Integrated temperature sensor

LANGLEY-12056 B77-10229 07

Deployable heat-pipe radiator

M-FS-23292 B77-10413 06

CORK (MATERIALS)

Molding cork sheets to complex shapes

M-FS-23626 B77-10236 08

CORRELATION DETECTION

Extrasensitive phase-locked-loop circuit

MSC-16770 B77-10249 01

CORROSION PREVENTION

Liquid-oxygen compatible,

flame-resistant coating.

KSC-11020 B77-10192 04

Vacuum-assisted impregnation of

materials

MSC-16785 B77-10317 08

CORROSION RESISTANCE

Oxidation-resistant cermet

NPO-13666 B77-10190 04

Stress, corrosion, and heat resistant

cermet

NPO-13690 B77-10191 04

Flame and acid resistant polyimide

fibers

MSC-16074 B77-10282 04

COST ANALYSIS

Solar-powered air-conditioning

M-FS-23276 B77-10106 06

COST REDUCTION

Two-axis movable concentrating solar

energy collector

NPO-13291 B77-10369 03

Optimizing simulated trajectories

LANGLEY-12089 B77-10420 06

COSTS

PERT TIME III

LANGLEY-11887 B77-10333 09

COUNTERFLOWRemoving CO₂ and moisture from air

MSC-14771 B77-10092 06

COUNTING CIRCUITS

Record dielectric breakdown

automatically

NPO-13599 B77-10216 06

COUPLING CIRCUITS

High-voltage capacitor-coupling circuit

MSC-16034 B77-10013 01

Inexpensive pulse-train converter

measures analog voltage

LEWIS-12912 B77-10248 01

Digital-signal transfer between isolated

systems

MSC-16508 B77-10344 01

COUPLINGS

Quick-disconnect coupling/filter

M-FS-22323 B77-10228 07

Disconnects, couplings, fittings, fixed

joints, and seals

LEWIS-12948 B77-10430 07

COVERINGS

No-spill touchup paint container

MSC-16269 B77-10428 07

CRACK INITIATION

Kinetic studies of stress-corrosion

cracking

M-FS-23259 B77-10286 04

Radiographic detection of cracks

MSC-16541 B77-10301 06

CRACK PROPAGATION

Hydrogen embrittlement of structural

alloys

LEWIS-12767 B77-10080 04

Crack-propagation predictions

MSC-16436 B77-10226 06

Kinetic studies of stress-corrosion

cracking

M-FS-23259 B77-10286 04

Automated predesign of aircraft

LANGLEY-12258 B77-10418 06

CRACKING (FRACTURING)

Controlling stress-corrosion cracking

M-FS-23416 B77-10200 04

Crack-propagation predictions

MSC-16436 B77-10226 06

CRACKS

Crack-propagation predictions

MSC-16436 B77-10226 06

Radiographic detection of cracks

MSC-16541 B77-10301 06

CRANES

Overhead-handling, universal-positioning

device

M-FS-23434 B77-10312 07

CREEP TESTS

Kinetic studies of stress-corrosion

cracking

M-FS-23259 B77-10286 04

CRITICAL TEMPERATURE

Determining critical temperatures and

volumes

NPO-13405 B77-10070 04

Estimating molar volume and expansion

NPO-13404 B77-10072 04

CROP IDENTIFICATION

Multispectral image processor

MSC-16253 B77-10172 03

CRYOGENIC EQUIPMENT

Measuring cryogenic-refrigerator cooling

capacity

NPO-13435 B77-10411 06

CRYOGENIC FLUID STORAGE

Liquid-hydrogen boiloff reliquifier
KSC-11021 B77-10057 03
Cryogenic liquid-level detector
M-FS-23253 B77-10410 06

CRYOGENIC FLUIDS

Cryogenic liquid-level detector
M-FS-23253 B77-10410 06

CRYOGENIC ROCKET PROPELLANTS

Hydraulic pressure stabilization and
'Pogo' suppression
M-FS-19287 B77-10105 06

CRYOGENICS

Radioactive-gas separation technique
GSFC-12019 B77-10169 03
Superconducting thermometer for
cryogenics
LANGLEY-12055 B77-10180 03
Tough strong iron alloys for cryogenic
service
LEWIS-12726 B77-10281 04

CRYOPUMPING

Radioactive-gas separation technique
GSFC-12019 B77-10169 03

CRYSTAL DEFECTS

Vibration improves single-crystal yield
M-FS-23683 B77-10133 08
Growth of GaAs crystals
M-FS-23681 B77-10144 08

CRYSTAL DISLOCATIONS

Measurement of friction and wear
LEWIS-12910 B77-10429 07

CRYSTAL GROWTH

Effects of oscillating magnetic fields on
liquids
M-FS-15235 B77-10063 03
Vibration improves single-crystal yield
M-FS-23683 B77-10133 08
Growth of GaAs crystals
M-FS-23681 B77-10144 08

CRYSTAL LATTICES

Obtaining ultradry crystalline solids
NPO-13618 B77-10199 04

CRYSTAL STRUCTURE

Vibration improves single-crystal yield
M-FS-23683 B77-10133 08
Measurement of friction and wear
LEWIS-12910 B77-10429 07

CRYSTALLOGRAPHY

Large-area soft X-ray imaging system
GSFC-12093 B77-10042 03
Growth of GaAs crystals
M-FS-23681 B77-10144 08
Measurement of friction and wear
LEWIS-12910 B77-10429 07

CRYSTALS

Growth of GaAs crystals
M-FS-23681 B77-10144 08
Obtaining ultradry crystalline solids
NPO-13618 B77-10199 04
Properties of doped cesium iodide
crystals
M-FS-23148 B77-10202 04

CURRENT AMPLIFIERS

Gain and Phase-margin measurements
NPO-13296 B77-10025 02
Differential current driver
MSC-16475 B77-10343 01

CURRENT REGULATORS

Pulse-width-modulated high-current
power supply
MSC-14668 B77-10158 01
Simple constant-current-regulated power
supply
LEWIS-12894 B77-10251 01

Low-insertion-resistance current
monitor
GSFC-12278 B77-10258 01

Differential current driver
MSC-16475 B77-10343 01
Simple, accurate analog divider for low
divisor values
LEWIS-11881 B77-10350 01

CURVED PANELS

Molding cork sheets to complex shapes
M-FS-23626 B77-10236 08

CUTTERS

Sharpening ball-nose mill cutters
LANGLEY-10450 B77-10123 07
Plaster core washout tool
MSC-16635 B77-10314 07

CUTTING

Drilling technique for crystals
M-FS-23580 B77-10320 08

D**DAMPING**

Dynamic stability of multilayer sandwich
plates
NPO-11625 B77-10108 06
Step motor damping for high-inertia
loads
GSFC-11871 B77-10425 07

DATA ACQUISITION

Data acquisition for solar and wind
energy
NPO-13908 B77-10146 09
Autonomous rendezvous and feature
detection system using TV imagery
LANGLEY-12050 B77-10356 02
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03

DATA BASES

Flexible data-management system
LEWIS-12570 B77-10242 09

DATA COLLECTION PLATFORMS

Data acquisition for solar and wind
energy
NPO-13908 B77-10146 09

DATA CONVERTERS

'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01
High speed DAC
NPO-13805 B77-10163 02
Changing NRZ data to biphase logic
MSC-16688 B77-10268 02
Digital-signal transfer between isolated
systems
MSC-16508 B77-10344 01

DATA LINKS

Dual-purpose laboratory cage/antenna
LANGLEY-11587 B77-10086 05
Multichannel implantable telemetry
system
ARC-11079 B77-10288 05

DATA MANAGEMENT

Priority protocol and control circuit
NPO-13901 B77-10030 02
Flexible data-management system
LEWIS-12570 B77-10242 09

DATA PROCESSING

Priority protocol and control circuit
NPO-13901 B77-10030 02
Simultaneous EKG and ultrasonoscope
display
ARC-11137 B77-10088 05
Bidirectional Amplifier
KSC-10856 B77-10150 01

'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01
Earth resources interactive processing
system
MSC-16004 B77-10183 03
Multispectral data analysis
MSC-16322 B77-10224 06
Flexible data-management system
LEWIS-12570 B77-10242 09

DATA PROCESSING EQUIPMENT

Advanced general-purpose computer
M-FS-23531 B77-10165 02

DATA RECORDERS

Record dielectric breakdown
automatically
NPO-13599 B77-10216 06

DATA REDUCTION

Multispectral data analysis
MSC-16322 B77-10224 06
Flexible data-management system
LEWIS-12570 B77-10242 09
Edge-following algorithm for tracking
geological features
LANGLEY-12051 B77-10328 09

DATA SAMPLING

Three-level signal sampler has automatic
threshold
NPO-14042 B77-10157 01

DATA STORAGE

Battery peak-charge voltage monitor
LANGLEY-11978 B77-10001 01
Bias-field equalizer for bubble
memories
M-FS-23189 B77-10253 01

DATA SYSTEMS

Earth resources interactive processing
system
MSC-16004 B77-10183 03
Flexible data-management system
LEWIS-12570 B77-10242 09
Changing NRZ data to biphase logic
MSC-16688 B77-10268 02

DATA TRANSMISSION

Differential pulse-code modulation
MSC-12506 B77-10027 02
Bidirectional Amplifier
KSC-10856 B77-10150 01
High speed DAC
NPO-13805 B77-10163 02
Multiplexed fiber-optic transmission
system
KSC-11047 B77-10164 02
Advanced general-purpose computer
M-FS-23531 B77-10165 02
Capacitive connectors for digital-data
lines
GSFC-12238 B77-10250 01
Changing NRZ data to biphase logic
MSC-16688 B77-10268 02
Rotating optical coupler for signal
transmission
NPO-14066 B77-10371 03

DECODING

Secure communications system
MSC-16462 B77-10162 02

DECONTAMINATION

Space-age vacuum cleaning
NPO-14008 B77-10442 08

DEFECTS

Ultrasonic detection of bearing defects
M-FS-23446 B77-10306 06
Technology of welding aluminum
alloys-III
MSC-18083 B77-10433 08

DEHYDRATION

Obtaining ultradry crystalline solids
NPO-13618 B77-10199 04

DELAMINATING

Ultrasonic strength evaluation of
fiber-reinforced composites
LEWIS-12769 B77-10386 04

DELAY LINES

Simplified sensing for cloud chamber
MSC-14708 B77-10058 03

DEMODULATORS

Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01

DENDRITIC CRYSTALS

Flexible separator for alkaline batteries
LEWIS-12649 B77-10002 01

DENSITY (NUMBER/VOLUME)

Obtaining a tomographic image from
transmission projections
NPO-13739 B77-10449 09

DENSITY MEASUREMENT

Density measurements of trace gases
ARC-10760 B77-10168 03

DEPRIVATION

Influence of lubricant starvation of
mechanical parts
LEWIS-12884 B77-10414 06

DESICCATORS

Obtaining ultradry crystalline solids
NPO-13618 B77-10199 04

DESIGN ANALYSIS

Design and analysis of supersonic
aircraft
LANGLEY-12237 B77-10422 06

DESULFURIZING

Low-temperature coal desulfurization
NPO-13937 B77-10166 03

Screw-extruded coal
NPO-13769 B77-10382 04

DETECTION

Digital frequency-offset detector
MSC-16358 B77-10152 01
Density measurements of trace gases
ARC-10760 B77-10168 03
Autonomous rendezvous and feature
detection system using TV imagery
LANGLEY-12050 B77-10356 02

DEUTERIUM PLASMA

Negative deuterium-ion source
NPO-14113 B77-10378 03

DEVIATION

FM oscillator has improved deviation
linearity
M-FS-23562 B77-10011 01

DEW

Improved dewpoint-probe calibration
MSC-16811 B77-10406 06

DIAMINES

Soluble, thermally-stable aromatic
polyimides
LANGLEY-12092 B77-10193 04

DIAPHRAGMS (MECHANICS)

Miniature diaphragm valve for medical
equipment
LANGLEY-11775 B77-10398 05

DIELECTRICS

Record dielectric breakdown
automatically
NPO-13599 B77-10216 06
Polyimide thin-film dielectrics on
ferroelectrics
LANGLEY-11996 B77-10239 08

DIESEL ENGINES

Closed-cycle hydrogen-fueled engine
NPO-13763 B77-10119 07
Fuel from wastes helps power diesel
engines
MSC-16598 B77-10125 07

DIESEL FUELS

Closed-cycle hydrogen-fueled engine
NPO-13763 B77-10119 07
Fuel from wastes helps power diesel
engines
MSC-16598 B77-10125 07

DIFFERENTIAL AMPLIFIERS

Differential current driver
MSC-16475 B77-10343 01
Charge-coupled differential amplifier
LANGLEY-12110 B77-10349 01

DIFFERENTIAL THERMAL ANALYSIS

Fast-response cloud chamber
M-FS-23588 B77-10275 03

DIGITAL COMPUTERS

Advanced general-purpose computer
M-FS-23531 B77-10165 02

DIGITAL DATA

'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01
Capacitive connectors for digital-data
lines
GSFC-12238 B77-10250 01
Changing NRZ data to biphase logic
MSC-16688 B77-10268 02

DIGITAL FILTERS

'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01

DIGITAL INTEGRATORS

Step motor damping for high-inertia
loads
GSFC-11871 B77-10425 07

DIGITAL SYSTEMS

Secure communications system
MSC-16462 B77-10162 02

DIGITAL TECHNIQUES

Digital frequency-offset detector
MSC-16358 B77-10152 01
Improved numerical control of oscillator
frequency
MSC-16747 B77-10347 01

DIGITAL TO ANALOG CONVERTERS

Three-level signal sampler has automatic
threshold
NPO-14042 B77-10157 01
High speed DAC
NPO-13805 B77-10163 02

DIGITAL TRANSDUCERS

Digital-signal transfer between isolated
systems
MSC-16508 B77-10344 01

DIODES

Noise adding radiometer improvement
NPO-13108 B77-10039 03
MIS diode structure in As+-implanted
CdS
LANGLEY-12156 B77-10159 01
Simple, accurate analog divider for low
divisor values
LEWIS-11881 B77-10350 01

DIRECT POWER GENERATORS

Predicting hydrogen-storage capabilities
of metals
NPO-13893 B77-10074 04

DIRECTIONAL CONTROL

Priority protocol and control circuit
NPO-13901 B77-10030 02

DIRT

Particle Impact Noise Detection (PIND)
test
MSC-16208 B77-10099 06

DISCONNECT DEVICES

Quick-disconnect coupling/filter
M-FS-22323 B77-10228 07
Disconnects, couplings, fittings, fixed
joints, and seals
LEWIS-12948 B77-10430 07

DISKS (SHAPES)

Adhesiveless and grooveless sealing
technique
LANGLEY-11779 B77-10444 08

DISPENSERS

Drug-dosage indicator
GSFC-12139 B77-10210 05

DISPERSIONS

Metal/polyvinyl pyridine catalytic beads
NPO-13912 B77-10384 04

DISPLACEMENT MEASUREMENT

Design of minimum-weight structures
LANGLEY-12209 B77-10310 06

DISPLAY DEVICES

Remote surface-height measurement
NPO-13862 B77-10044 03
Field-of-view divider
MSC-16106 B77-10050 03
Rotating-vector TV cursor
MSC-16119 B77-10055 03
Simultaneous EKG and ultrasonoscope
display
ARC-11137 B77-10088 05
Multispectral image processor
MSC-16253 B77-10172 03
Record dielectric breakdown
automatically
NPO-13599 B77-10216 06
Shuttle avionics visual display
MSC-16591 B77-10241 09
Laser produces color images from digital
data
GSFC-12198 B77-10271 03
Mask and display program
M-FS-23625 B77-10355 01
Obtaining a tomographic image from
transmission projections
NPO-13739 B77-10449 09

DISTANCE

Optical proximity detector
NPO-13306 B77-10041 03

DISTANCE MEASURING EQUIPMENT

Remote surface-height measurement
NPO-13862 B77-10044 03
Subsurface 'radar' camera
NPO-13864 B77-10045 03

DISTORTION

Distortion in AM-baseband telemetry
M-FS-22180 B77-10034 02

DISTRIBUTION FUNCTIONS

Multivariate-normality goodness-of-fit
tests
M-FS-23523 B77-10149 09

DIVING (UNDERWATER)

Hand fin for swimming
M-FS-21632 B77-10122 07

DOCUMENT STORAGE

Document retrieval and reporting
LEWIS-12401 B77-10334 09

DOCUMENTS

Document retrieval and reporting
LEWIS-12401 B77-10334 09

DOMESTIC SATELLITE COMMUNICATIONS SYSTEMS

Satellite-based interference analyzer
GSFC-12150 B77-10264 02

DOPLER EFFECT

Doppler techniques for measuring fluid
velocities
M-FS-23289 B77-10279 03

DOPLER RADAR

Burst simulator for laser-Doppler
velocimeter
LANGLEY-11859 B77-10048 03

DOSAGE

Drug-dosage indicator
GSFC-12139 B77-10210 05

DRAG REDUCTION

- Compressible laminar boundary-layer flow
 - LANGLEY-12254 B77-10423 06
- DRILLING**
 - Drilling technique for crystals
 - M-FS-23580 B77-10320 08
 - Adding through-bolt holes to pin-fin cold plates
 - MSC-16421 B77-10441 08
- DRILLS**
 - Plaster core washout tool
 - MSC-16635 B77-10314 07
- DRONE AIRCRAFT**
 - Rotating mobile launcher
 - ARC-10979 B77-10120 07
- DRUGS**
 - Drug-dosage indicator*
 - GSFC-12139 B77-10210 05
- DRUMS**
 - Simplified systematic production of graphite/polymide prepreg
 - LANGLEY-12266 B77-10393 04
- DRYING**
 - Obtaining ultradry crystalline solids
 - NPO-13618 B77-10199 04
- DRYING APPARATUS**
 - Obtaining ultradry crystalline solids
 - NPO-13618 B77-10199 04
- DUST**
 - Dust-contamination monitor
 - M-FS-23702 B77-10272 03
- DYNAMIC CHARACTERISTICS**
 - Trim conditions of mated vehicles
 - MSC-16188 B77-10111 06
- DYNAMIC CONTROL**
 - Automatic channel trimming for control systems: A concept
 - MSC-16027 B77-10161 02
- DYNAMIC LOADS**
 - Defining structural limit zones
 - M-FS-23582 B77-10451 09
- DYNAMIC PROGRAMMING**
 - Fluid-connector selection
 - M-FS-23072 B77-10109 06
- DYNAMIC RESPONSE**
 - Wide-dynamic-range detector
 - GSFC-12149 B77-10151 01
- DYNAMIC STABILITY**
 - Dynamic stability of multilayer sandwich plates
 - NPO-11625 B77-10108 06
- DYNAMIC STRUCTURAL ANALYSIS**
 - Finite-element structural analysis
 - MSC-16320 B77-10148 09
 - Defining structural limit zones
 - M-FS-23582 B77-10451 09

E

EARTH ATMOSPHERE

- Atmospheric interaction plume
 - LANGLEY-12203 B77-10110 06

EARTH RESOURCES

- Extraction of trace elements from ores
 - HQN-10875 B77-10079 04
- Earth resources interactive processing system
 - MSC-16004 B77-10183 03

EARTH RESOURCES INFORMATION SYSTEM

- Earth resources interactive processing system
 - MSC-16004 B77-10183 03

ECHOCARDIOGRAPHY

- Batteryless implanted echosonometer
 - ARC-11035 B77-10289 05

EDDY CURRENTS

- Effects of oscillating magnetic fields on liquids
 - M-FS-15235 B77-10063 03

EDGES

- Edge-following algorithm for tracking geological features
 - LANGLEY-12051 B77-10328 09

EFFECTIVE PERCEIVED NOISE LEVELS

- Acoustic imaging system
 - NPO-13888 B77-10046 03

EFFLUENTS

- Carbon-chlorine-carbon sewage treatment
 - NPO-13972 B77-10167 03
- Detection of hydrogen chloride gas in air
 - LANGLEY-12218 B77-10395 04

EIGENVALUES

- TRIM-STAB-Aerospace vehicle trim and stability
 - MSC-14927 B77-10114 06

ELASTIC WAVES

- Vibration improves single-crystal yield
 - M-FS-23683 B77-10133 08

ELASTOHYDRODYNAMICS

- Infrared temperature maps of EHD lubrication
 - LEWIS-12685 B77-10097 06
- Influence of lubricant starvation of mechanical parts
 - LEWIS-12884 B77-10414 06
- Determining minimum lubrication film for machine parts
 - LEWIS-12885 B77-10415 06

ELASTOMERS

- Ammonia-compatible elastomers and alloys
 - MSC-16559 B77-10394 04

ELECTRIC BATTERIES

- Battery peak-charge voltage monitor
 - LANGLEY-11978 B77-10001 01
- Flexible separator for alkaline batteries
 - LEWIS-12649 B77-10002 01
- Rechargeable nickel-zinc batteries
 - LEWIS-12784 B77-10003 01
- Strong lightweight battery housing
 - M-FS-23079 B77-10004 01
- Single-fill-point battery reservoir
 - M-FS-16801 B77-10005 01
- Very low-power power supplies
 - LANGLEY-12117 B77-10008 01
- Power switch/filter for digital circuits
 - MSC-16442 B77-10155 01
- Fireman's lamp
 - M-FS-23783 B77-10305 06

ELECTRIC BRIDGES

- Bridge/amplifier configuration for switched arrays
 - LANGLEY-11652 B77-10009 01
- Improved load-cell compensation
 - MSC-16466 B77-10214 06
- Multipurpose miniature drag-force anemometer
 - LEWIS-12790 B77-10402 06

ELECTRIC CELLS

- Solar-cell array design handbook
 - NPO-14106 B77-10182 03

ELECTRIC CONNECTORS

- Connector with cable-to-chassis strain relief
 - GSFC-12164 B77-10016 01

Capacitive connectors for digital-data lines

- GSFC-12238 B77-10250 01
- Choosing the right connector
 - M-FS-23785 B77-10354 01
- Cast-in-place grommets for honeycomb substrates
 - NPO-13868 B77-10445 08

ELECTRIC CONTACTS

- Commutator assembly technique
 - LANGLEY-11844 B77-10132 08
- Hall-effect toggle switch
 - MSC-16354 B77-10244 01
- Magnetic rotary switch
 - MSC-16624 B77-10245 01
- Individual control of relays in a matrix
 - NPO-14095 B77-10246 01
- Low-resistance contacts for GaAlAs/GaAs cells
 - LANGLEY-12201 B77-10339 01
- Brushless tachometer gives speed and direction
 - M-FS-23175 B77-10353 01
- Rotating optical coupler for signal transmission
 - NPO-14066 B77-10371 03

ELECTRIC CONTROL

- Cost-effective actuator tester
 - MSC-16324 B77-10302 06

ELECTRIC CORONA

- High-voltage capacitor-coupling circuit
 - MSC-16034 B77-10013 01

ELECTRIC DISCHARGES

- Safe handling practices for electrostatic-sensitive devices
 - MSC-16642 B77-10260 01
- Recording-tape lightning detector
 - KSC-11057 B77-10359 02

ELECTRIC ENERGY STORAGE

- Low-loss energy storage flywheel
 - GSFC-12030 B77-10118 07

ELECTRIC FIELD STRENGTH

- Accurate RF field monitoring in shielded enclosure
 - MSC-16325 B77-10096 06

ELECTRIC FILTERS

- Charge-coupled differential amplifier
 - LANGLEY-12110 B77-10349 01

ELECTRIC GENERATORS

- Electrical generator uses ocean waves
 - LANGLEY-11551 B77-10006 01
- Low-loss energy storage flywheel
 - GSFC-12030 B77-10118 07
- Solar-power mountain concept
 - NPO-13861 B77-10177 03

ELECTRIC MOTORS

- Electro-optically-indexed microwave switch
 - NPO-11851 B77-10017 01
- Commutator assembly technique
 - LANGLEY-11844 B77-10132 08
- Save power in AC induction motors
 - M-FS-23280 B77-10154 01
- Gearless speed-reduction motor
 - GSFC-12138 B77-10311 07

ELECTRIC OUTLETS

- Connector with cable-to-chassis strain relief
 - GSFC-12164 B77-10016 01

ELECTRIC POTENTIAL

- Low-insertion-resistance current monitor
 - GSFC-12278 B77-10258 01

ELECTRIC POWER PLANTS

- Tower-supported solar-energy collector
 - NPO-13810 B77-10038 03

- Solar-power mountain concept
NPO-13861 B77-10177 03
'Solar ponds'
NPO-13581 B77-10276 03
- ELECTRIC POWER SUPPLIES**
Pulse-width-modulated high-current power supply
MSC-14668 B77-10158 01
Simple constant-current-regulated power supply
LEWIS-12894 B77-10251 01
Precision voltage division without precision parts
GSFC-12182 B77-10256 01
- ELECTRIC RELAYS**
Individual control of relays in a matrix
NPO-14095 B77-10246 01
Versatile solid-state relay
M-FS-23632 B77-10247 01
- ELECTRIC WELDING**
Linear dimension establishes weld integrity
NPO-13977 B77-10436 08
Tube-weld inspection tool
NPO-13978 B77-10437 08
- ELECTRIC WIRE**
Connector with cable-to-chassis strain relief
GSFC-12164 B77-10016 01
Semiautomatic labeling of small wires
MSC-16233 B77-10233 08
Twisted shield-pair transmission line
MSC-16702 B77-10352 01
Heat-dissipating aluminum wire
M-FS-24274 B77-10438 08
Cast-in-place grommets for honeycomb substrates
NPO-13868 B77-10445 08
- ELECTRICAL FAULTS**
Detecting wire-bond failures
M-FS-23584 B77-10131 08
Circuit monitors powerline interruptions
MSC-16763 B77-10346 01
- ELECTRICAL GROUNDING**
Lightning-activated electrical ground for cable shields
MSC-12745 B77-10019 01
- ELECTRICAL IMPEDANCE**
Simple, accurate analog divider for low divisor values
LEWIS-11881 B77-10350 01
- ELECTRICAL INSULATION**
Shrink tubing identifier
MSC-16430 B77-10130 08
Polyimide thin-film dielectrics on ferroelectrics
LANGLEY-11996 B77-10239 08
Heat-dissipating aluminum wire
M-FS-24274 B77-10438 08
- ELECTRICAL MEASUREMENT**
Fast measurement of MOS capacitors
NPO-13892 B77-10020 01
Improved load-cell compensation
MSC-16466 B77-10214 06
- ELECTRICAL RESISTANCE**
Improved load-cell compensation
MSC-16466 B77-10214 06
Low-resistance contacts for GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01
- ELECTRICAL RESISTIVITY**
Testing internal coatings in metal vessels
MSC-16532 B77-10403 06
- ELECTRO-OPTICAL PHOTOGRAPHY**
Electrically-controlled variable-color optical filters
MSC-14944 B77-10049 03
Calibration faceplate for x-ray image intensifiers
ARC-11146 B77-10399 05
Alignment tool for X-ray image intensifiers
ARC-11017 B77-10400 05
- ELECTRO-OPTICS**
Electro-optically-indexed microwave switch
NPO-11851 B77-10017 01
Electrically-controlled variable-color optical filters
MSC-14944 B77-10049 03
- ELECTROCARDIOGRAPHY**
Simultaneous EKG and ultrasonoscope display
ARC-11137 B77-10088 05
Batteryless implanted echosonometer
ARC-11035 B77-10289 05
- ELECTROCATALYSTS**
Hollow-fiber H₂/O₂ fuel cell
NPO-13732 B77-10175 03
- ELECTROCHEMICAL CELLS**
Single-fill-point battery reservoir
M-FS-16801 B77-10005 01
Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04
Controlling fires in silver/zinc batteries
M-FS-22952 B77-10220 06
Improved fuel cell
M-FS-23797 B77-10377 03
- ELECTRODELESS DISCHARGES**
Lightning-activated electrical ground for cable shields
MSC-12745 B77-10019 01
- ELECTRODEPOSITION**
Anodic growth of niobium oxide
M-FS-23150 B77-10201 04
Modular multiapertures for light sensors
M-FS-23249 B77-10321 08
- ELECTRODES**
Hollow-fiber H₂/O₂ fuel cell
NPO-13732 B77-10175 03
Longitudinally-vibrating surgical microelectrode
NPO-13910 B77-10292 05
- ELECTROENCEPHALOGRAPHY**
Acquisition system for biomedical data
MSC-16144 B77-10209 05
Multichannel implantable telemetry system
ARC-11079 B77-10288 05
Biotelemetry system for ambulatory patients
ARC-11142 B77-10401 05
- ELECTROFORMING**
Modular multiapertures for light sensors
M-FS-23249 B77-10321 08
- ELECTROLYSIS**
Thermochemical-photolytic production of H₂ and O₂ from water
LANGLEY-12118 B77-10187 04
- ELECTROMAGNETIC ABSORPTION**
Electromagnetic power absorber
NPO-13830 B77-10174 03
- ELECTROMAGNETIC INTERFERENCE**
Satellite-based interference analyzer
GSFC-12150 B77-10264 02
- ELECTROMAGNETIC MEASUREMENT**
Accurate RF field monitoring in shielded enclosure
MSC-16325 B77-10096 06
- ELECTROMAGNETIC NOISE**
Noise adding radiometer improvement
NPO-13108 B77-10039 03
Satellite-based interference analyzer
GSFC-12150 B77-10264 02
- ELECTROMAGNETIC RADIATION**
Dual-purpose laboratory cage/antenna
LANGLEY-11587 B77-10086 05
- ELECTROMAGNETIC SHIELDING**
Lightning-activated electrical ground for cable shields
MSC-12745 B77-10019 01
Radiation shielding methods
NPO-13923 B77-10065 03
- ELECTROMAGNETIC WAVE FILTERS**
Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01
- ELECTRON EMISSION**
ESCA measurement of insulator surfaces
NPO-13772 B77-10076 04
- ELECTRON GUNS**
Simple constant-current-regulated power supply
LEWIS-12894 B77-10251 01
- ELECTRON IMPACT**
Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03
- ELECTRON MICROSCOPES**
Process sharpens micrographic images
MSC-16846 B77-10374 03
- ELECTRONIC CONTROL**
Priority protocol and control circuit
NPO-13901 B77-10030 02
Versatile solid-state relay
M-FS-23632 B77-10247 01
Electronic shaft-angle encoder
LEWIS-12832 B77-10351 01
- ELECTRONIC EQUIPMENT**
Hall-effect toggle switch
MSC-16354 B77-10244 01
Magnetic rotary switch
MSC-16624 B77-10245 01
- ELECTRONIC EQUIPMENT TESTS**
Gain and Phase-margin measurements
NPO-13296 B77-10025 02
Particle Impact Noise Detection (PIND) test
MSC-16208 B77-10099 06
Thermal-impedance test for hybrid power devices
MSC-16643 B77-10153 01
Record dielectric breakdown automatically
NPO-13599 B77-10216 06
Hearing-aid tester
MSC-14916 B77-10287 05
Measuring solar-cell quality
NPO-14100 B77-10295 06
Solar cell measurements in the field
NPO-14067 B77-10296 06
Cost-effective actuator tester
MSC-16324 B77-10302 06
Circuit monitors powerline interruptions
MSC-16763 B77-10346 01
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06
- ELECTRONIC FILTERS**
Power switch/filter for digital circuits
MSC-16442 B77-10155 01

- Noise reduction in photomultiplier circuits
 LANGLEY-12091 B77-10160 01
- ELECTRONIC PACKAGING**
 Semiautomatic labeling of small wires
 MSC-16233 B77-10233 08
 Honeycomb chassis for electronic components
 NPO-13891 B77-10237 08
 Potting procedure for electronic components
 MSC-16290 B77-10324 08
 Particle-impact noise detector (PIND)
 MSC-16626 B77-10404 06
 Bonding aluminum beam leads
 M-FS-23183 B77-10443 08
- ELECTROPHORESIS**
 Isoelectric leukocyte focusing
 M-FS-23271 B77-10084 05
 Control of electro-osmotic flow
 M-FS-23554 B77-10283 04
- ELECTROPLATING**
 Printing circuits without a mask
 NPO-11758 B77-10129 07
 Anodic growth of niobium oxide
 M-FS-23150 B77-10201 04
 Modular multiaperatures for light sensors
 M-FS-23249 B77-10321 08
- ELECTROSTATIC CHARGE**
 Safe handling practices for electrostatic-sensitive devices
 MSC-16642 B77-10260 01
- ELECTROSTATIC SHIELDING**
 Safe handling practices for electrostatic-sensitive devices
 MSC-16642 B77-10260 01
- ELECTROSTATICS**
 Safe handling practices for electrostatic-sensitive devices
 MSC-16642 B77-10260 01
- EMBEDDING**
 Potting procedure for electronic components
 MSC-16290 B77-10324 08
- ENCAPSULATING**
 Flexible foam masking for parylene coating
 M-FS-23129 B77-10138 08
 Low-reflection silicon solar cells
 LEWIS-12418 B77-10318 08
 Potting procedure for electronic components
 MSC-16290 B77-10324 08
- ENDOTHERMIC REACTIONS**
 Heat-moderating filler for intumescent coatings
 ARC-11043 B77-10069 04
- ENERGY ABSORPTION**
 Electromagnetic power absorber
 NPO-13830 B77-10174 03
- ENERGY ABSORPTION FILMS**
 High-performance flat-plate solar collector
 NPO-13883 B77-10035 03
- ENERGY CONSERVATION**
 Low-power anemometer
 LANGLEY-11473 B77-10103 06
- ENERGY CONVERSION**
 Fuel from wastes helps power diesel engines
 MSC-16598 B77-10125 07
 Power switch/filter for digital circuits
 MSC-16442 B77-10155 01
- ENERGY CONVERSION EFFICIENCY**
 High-performance flat-plate solar collector
 NPO-13883 B77-10035 03
 Air/salt/gravity-flow solar heating
 LANGLEY-12009 B77-10036 03
 Low-loss energy storage flywheel
 GSFC-12030 B77-10118 07
 Primary-controlled ac-to-dc power converter
 M-FS-23198 B77-10342 01
- ENERGY DISSIPATION**
 Save power in AC induction motors
 M-FS-23280 B77-10154 01
 Liquid-circulating garment controls thermal balance
 MSC-16727 B77-10294 05
 Primary-controlled ac-to-dc power converter
 M-FS-23198 B77-10342 01
- ENERGY LEVELS**
 Laser-excited gas-component identifier
 LANGLEY-12035 B77-10051 03
- ENERGY REQUIREMENTS**
 Power switch/filter for digital circuits
 MSC-16442 B77-10155 01
- ENERGY STORAGE**
 Very low-power power supplies
 LANGLEY-12117 B77-10008 01
 Low-loss energy storage flywheel
 GSFC-12030 B77-10118 07
 Rotation molding of flywheels
 M-FS-23674 B77-10137 08
 Improved fuel cell
 M-FS-23797 B77-10377 03
- ENERGY TECHNOLOGY**
 Changing sunlight to microwaves: A concept
 NPO-14068 B77-10262 02
 Heat exchanger for solar water heaters
 M-FS-23711 B77-10365 03
- ENERGY TRANSFER**
 Predicting hydrogen-storage capabilities of metals
 NPO-13893 B77-10074 04
- ENGINE DESIGN**
 Aircraft engine weight and dimensions
 LEWIS-12741 B77-10116 06
 Nickel-copper-zirconium alloy for catalytic creactors
 LEWIS-12245 B77-10188 04
- ENGINES**
 Two-axis movable concentrating solar energy collector
 NPO-13291 B77-10369 03
- ENVIRONMENT EFFECTS**
 Choosing the right connector
 M-FS-23785 B77-10354 01
- ENVIRONMENT POLLUTION**
 Airborne atmospheric sampling system
 LEWIS-12949 B77-10380 03
- ENVIRONMENT SIMULATION**
 Four-D global reference atmosphere
 M-FS-23336 B77-10066 03
- ENVIRONMENTAL CONTROL**
 Vapor-modulated heat pipe for improved temperature control
 ARC-11001 B77-10412 06
- ENVIRONMENTAL ENGINEERING**
 Demand-controlled lighting
 KSC-11010 B77-10023 02
- ENVIRONMENTAL MONITORING**
 Radiometer gives true absorption and emission coefficients
 NPO-13677 B77-10273 03
- ENVIRONMENTAL QUALITY**
 Four-D global reference atmosphere
 M-FS-23336 B77-10066 03
- ENZYME ACTIVITY**
 Biological-activity monitor
 NPO-14089 B77-10208 05
- EPITAXY**
 Simpler process produces more-efficient solar cell
 LANGLEY-12180 B77-10335 01
- EPOXY RESINS**
 Rotation molding of flywheels
 M-FS-23674 B77-10137 08
 Pretreatment for strong aluminum/epoxy/aluminum bonds
 GSFC-12232 B77-10195 04
- EQUALIZERS (CIRCUITS)**
 Bidirectional Amplifier
 KSC-10856 B77-10150 01
- EQUATIONS OF MOTION**
 Trim conditions of mated vehicles
 MSC-16188 B77-10111 06
 TRIM-STAB-Aerospace vehicle trim and stability
 MSC-14927 B77-10114 06
- EQUILIBRIUM EQUATIONS**
 TRIM-STAB-Aerospace vehicle trim and stability
 MSC-14927 B77-10114 06
- EROSION**
 Particle trajectories in radial-inflow turbines
 LEWIS-12561 B77-10309 06
- ERROR DETECTION CODES**
 Efficient bit-error detecting code
 KSC-11039 B77-10363 02
- ESCALATORS**
 Mass-balanced portable stairway
 GSFC-12172 B77-10121 07
- ETCHANTS**
 Low-reflection silicon solar cells
 LEWIS-12418 B77-10318 08
- ETCHING**
 Low-reflection silicon solar cells
 LEWIS-12418 B77-10318 08
 New process produces high-power Schottky diodes
 LEWIS-12749 B77-10337 01
 Measurement of friction and wear
 LEWIS-12910 B77-10429 07
- EULER EQUATIONS OF MOTION**
 Steady-state super/hypersonic inviscid flow
 LANGLEY-11891 B77-10113 06
- EUTECTIC ALLOYS**
 Homogeneous eutectic of Pb-Sb
 M-FS-23766 B77-10385 04
- EUTECTICS**
 New process produces high-power Schottky diodes
 LEWIS-12749 B77-10337 01
- EVAPORATION**
 Obtaining ultradry crystalline solids
 NPO-13618 B77-10199 04
- EXCRETION**
 Biological-activity monitor
 NPO-14089 B77-10208 05
- EXHAUST GASES**
 Detection of hydrogen chloride gas in air
 LANGLEY-12218 B77-10395 04
- EXHAUST SYSTEMS**
 Nickel-copper-zirconium alloy for catalytic creactors
 LEWIS-12245 B77-10188 04

EXHAUSTING

Multiple-compartment venting
M-FS-23581 B77-10112 06

EXPANSION

Estimating molar volume and expansion
NPO-13404 B77-10072 04

EXPLOSIONS

Protection against explosive blasts
LANGLEY-12014 B77-10219 06

EXPLOSIVES

Protection against explosive blasts
LANGLEY-12014 B77-10219 06

EXPULSION BLADDERS

Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06

EXTRACTION

Extraction of trace elements from ores
HON-10875 B77-10079 04
Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
Single-Donor Leukophoretic Technique
MSC-16297 B77-10205 05

EXTRUDING

Screw-extruded coal
NPO-13769 B77-10382 04

F

FABRICATION

The processing of materials in outer space
M-FS-23695 B77-10240 08

FABRICS

Quantitative measurement of the 'feel' of fabric
LANGLEY-12147 B77-10102 06
thermal-control coatings for fabrics
LANGLEY-11756 B77-10392 04

FAIL-SAFE SYSTEMS

Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06

FAILURE

Controlling stress-corrosion cracking
M-FS-23416 B77-10200 04
Fatigue-failure load indicator
LANGLEY-12027 B77-10213 06
Integrated temperature sensor
LANGLEY-12056 B77-10229 07

FAILURE ANALYSIS

Detecting wire-bond failures
M-FS-23584 B77-10131 08
Record dielectric breakdown automatically
NPO-13599 B77-10216 06
Crack-propagation predictions
MSC-16436 B77-10226 06
Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06
Reliability analysis for data management systems
M-FS-23208 B77-10331 09
Calculating parts factors for redundant systems
M-FS-23413 B77-10448 09

FAILURE MODES

Life-test methodology for mechanical components
M-FS-23082 B77-10095 06

FASTENERS

Vibration-resistant PC board feedthrough
MSC-16371 B77-10234 08

Allowable bending loads for mechanical fasteners
M-FS-23430 B77-10297 06
Floating nut for spacecraft application
M-FS-23248 B77-10427 07
Cable-clamp installation tool
NPO-13976 B77-10439 08
Cast-in-place grommets for honeycomb substrates
NPO-13868 B77-10445 08

FATIGUE (MATERIALS)

Hydrogen embrittlement of structural alloys
LEWIS-12767 B77-10080 04
Detecting wire-bond failures
M-FS-23584 B77-10131 08
Fatigue-failure load indicator
LANGLEY-12027 B77-10213 06
Crack-propagation predictions
MSC-16436 B77-10226 06
Ultrasonic detection of bearing defects
M-FS-23446 B77-10306 06

FATIGUE LIFE

Influence of lubricant starvation of mechanical parts
LEWIS-12884 B77-10414 06
Determining minimum lubrication film for machine parts
LEWIS-12885 B77-10415 06

FATIGUE TESTS

Life-test methodology for mechanical components
M-FS-23082 B77-10095 06
High-pressure high-temperature transducer
M-FS-23765 B77-10181 03

FEEDBACK AMPLIFIERS

Differential current driver
MSC-16475 B77-10343 01

FEEDBACK CIRCUITS

Constant-power source for resistive load
M-FS-23171 B77-10010 01
Circuit regulates voltage of dc-dc converter
LEWIS-12791 B77-10345 01

FEEDBACK CONTROL

Automatic channel trimming for control systems: A concept
MSC-16027 B77-10161 02
Circuit regulates voltage of dc-dc converter
LEWIS-12791 B77-10345 01

FERRITES

Annular momentum-control device
LANGLEY-11914 B77-10117 07

FERROELECTRICITY

Polyimide thin-film dielectrics on ferroelectrics
LANGLEY-11996 B77-10239 08

FERROFLUIDS

Magnetically-controlled bearing lubrication
M-FS-23009 B77-10231 07

FERROMAGNETIC MATERIALS

Magnetically-controlled bearing lubrication
M-FS-23009 B77-10231 07

FIBER OPTICS

Multiple-laser-energy detection system
LANGLEY-12017 B77-10052 03
Hybrid optical/digital detector
M-FS-23439 B77-10061 03
Multiplexed fiber-optic transmission system
KSC-11047 B77-10164 02

FIBER ORIENTATION

Rotation molding of flywheels
M-FS-23674 B77-10137 08

FIELD EFFECT TRANSISTORS

Differential multi-MOSFET nuclear radiation sensor
MSC-14444 B77-10059 03

FIELD STRENGTH

Record dielectric breakdown automatically
NPO-13599 B77-10216 06

FILE MAINTENANCE (COMPUTERS)

Automated process planning system
ARC-11145 B77-10447 08

FILLERS

Heat-moderating filler for intumescent coatings
ARC-11043 B77-10069 04

FILM THICKNESS

Influence of lubricant starvation of mechanical parts
LEWIS-12884 B77-10414 06
Determining minimum lubrication film for machine parts
LEWIS-12885 B77-10415 06

FILTERS

Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01

FILTRATION

Collectors for vacuum-cleaning lines
MSC-17011 B77-10142 08
Bacteria/virus filter membrane
MSC-16388 B77-10204 05

FINISHES

Pretreatment for strong aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04

FINITE DIFFERENCE THEORY

Vector sweep
LEWIS-12281 B77-10332 09

FINITE ELEMENT METHOD

Design of minimum-weight structures
LANGLEY-12209 B77-10310 06
Nonlinear finite elements
M-FS-23664 B77-10452 09

FINS

Hand fin for swimming
M-FS-21632 B77-10122 07

FIRE DAMAGE

Mathematical model of fires
NPO-13950 B77-10145 09

FIRE EXTINGUISHERS

Controlling fires in silver/zinc batteries
M-FS-22952 B77-10220 06

FIRE FIGHTING

Fireman's lamp
M-FS-23783 B77-10305 06

FIRE PREVENTION

Improved intumescent coating
ARC-11042 B77-10068 04
Heat-moderating filler for intumescent coatings
ARC-11043 B77-10069 04
Mathematical model of fires
NPO-13950 B77-10145 09
Liquefied natural gas (LNG) safety
LEWIS-12720 B77-10147 09
Controlling fires in silver/zinc batteries
M-FS-22952 B77-10220 06

FISSIONABLE MATERIALS

Whole-rock uranium analysis by fission-track activation
NPO-13483 B77-10383 04

FITTINGS

Disconnects, couplings, fittings, fixed joints, and seals
LEWIS-12948 B77-10430 07

FIXTURES

Tube-bending scale/protractor
MSC-16272 B77-10143 08

FLAME PROPAGATION

Mathematical model of fires
NPO-13950 B77-10145 09

FLAME RETARDANTS

Liquid-oxygen compatible,
flame-resistant coating.
KSC-11020 B77-10192 04
Flame and acid resistant polyimide
fibers
MSC-16074 B77-10282 04

FLANGES

Fluid-connector selection
M-FS-23072 B77-10109 06

FLAT PLATES

Modular test system for solar collectors
M-FS-23701 B77-10173 03
'Tubless' flat-plate solar collector
NPO-13897 B77-10368 03

FLEXIBILITY

Quantitative measurement of the 'feel'
of fabric
LANGLEY-12147 B77-10102 06

FLIGHT INSTRUMENTS

Field-of-view divider
MSC-16106 B77-10050 03

FLIGHT MECHANICS

Optimizing simulated trajectories
LANGLEY-12089 B77-10420 06

FLIGHT SIMULATION

Optimizing simulated trajectories
LANGLEY-12089 B77-10420 06

FLOATS

'Either-side-up' inflatable liferaft
LANGLEY-10241 B77-10417 06

FLOW CHARACTERISTICS

Conditional sampling analysis for
turbulent flows
M-FS-23126 B77-10330 09

FLOW DISTRIBUTION

Three-dimensional supersonic viscous
flows
ARC-11087 B77-10115 06

Control of electro-osmotic flow
M-FS-23554 B77-10283 04

Conditional sampling analysis for
turbulent flows
M-FS-23126 B77-10330 09

Wide-field schlieren system
NPO-14174 B77-10370 03

Transonic flow about airfoils
LANGLEY-12265 B77-10421 06

FLOW EQUATIONS

Conditional sampling analysis for
turbulent flows
M-FS-23126 B77-10330 09

FLOW MEASUREMENT

Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06

Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06

Optical scanning system for laser
velocimeter
LANGLEY-12143 B77-10269 03

Conditional sampling analysis for
turbulent flows
M-FS-23126 B77-10330 09

Multipurpose miniature drag-force
anemometer
LEWIS-12790 B77-10402 06

FLOW VELOCITY

Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06

FLOW VISUALIZATION

Alinement tolerant Schlieren system
ARC-10971 B77-10179 03

Wide-field schlieren system
NPO-14174 B77-10370 03

FLOWMETERS

Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06

Inexpensive mass flowmeter
M-FS-23528 B77-10101 06

FLUID DYNAMICS

Doppler techniques for measuring fluid
velocities
M-FS-23289 B77-10279 03

FLUID FILMS

Determining minimum lubrication film for
machine parts
LEWIS-12885 B77-10415 06

FLUID FILTERS

Bacteria/virus filter membrane
MSC-16388 B77-10204 05

Quick-disconnect coupling/filter
M-FS-22323 B77-10228 07

FLUID FLOW

Wide-field schlieren system
NPO-14174 B77-10370 03

Multipurpose miniature drag-force
anemometer
LEWIS-12790 B77-10402 06

FLUID MECHANICS

Infrared temperature maps of EHD
lubrication
LEWIS-12685 B77-10097 06

Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06

FLUID TRANSMISSION LINES

Fluid-connector selection
M-FS-23072 B77-10109 06

Leak detector uses ultrasonics
MSC-16803 B77-10409 06

FLUIDIC CIRCUITS

Fluid-line math model
MSC-16230 B77-10223 06

FLUIDS

Compressibility measurement of
fluid-system ullage
MSC-16640 B77-10299 06

FLUORESCENCE

Biological-activity monitor
NPO-14089 B77-10208 05

Quantitative measurement of surface
contamination
M-FS-16679 B77-10217 06

FLUTTER

Inexpensive solid-state monitoring
circuit
LEWIS-12848 B77-10252 01

FLUX DENSITY

Large-area soft X-ray imaging system
GSFC-12093 B77-10042 03

FLUX QUANTIZATION

DC transformer uses magnetoresistors
M-FS-23659 B77-10255 01

FLYWHEELS

Low-loss energy storage flywheel
GSFC-12030 B77-10118 07

Rotation molding of flywheels
M-FS-23674 B77-10137 08

FOCUSING

Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03

FOLDING

Quantitative measurement of the 'feel'
of fabric
LANGLEY-12147 B77-10102 06

FORCED VIBRATION

Vibration improves single-crystal yield
M-FS-23683 B77-10133 08

FOREST FIRE DETECTION

Null-balancing microwave radiometer
LANGLEY-11130 B77-10040 03

Radiometer gives true absorption and
emission coefficients
NPO-13677 B77-10273 03

FORMING TECHNIQUES

Modular multiapertures for light
sensors
M-FS-23249 B77-10321 08

Adding through-bolt holes to pin-fin cold
plates
MSC-16421 B77-10441 08

FOURIER ANALYSIS

Hybrid optical/digital detector
M-FS-23439 B77-10061 03

FRACTURE MECHANICS

Nonlinear finite elements
M-FS-23664 B77-10452 09

FRACTURES (MATERIALS)

Crack-propagation predictions
MSC-16436 B77-10226 06

FRAMES

Foldable beam
LANGLEY-12077 B77-10424 07

FREE FLOW

Transonic flow about airfoils
LANGLEY-12265 B77-10421 06

FRENKEL DEFECTS

Anodic growth of niobium oxide
M-FS-23150 B77-10201 04

FREON

Integrated temperature sensor
LANGLEY-12056 B77-10229 07

FREQUENCY CONTROL

Digital frequency-offset detector
MSC-16358 B77-10152 01

Improved numerical control of oscillator
frequency
MSC-16747 B77-10347 01

FREQUENCY DISTRIBUTION

Ultrastable-frequency distribution
system
NPO-13836 B77-10031 02

FREQUENCY DIVISION MULTIPLEXING

Multiplexed fiber-optic transmission
system
KSC-11047 B77-10164 02

FREQUENCY MEASUREMENT

Digital frequency-offset detector
MSC-16358 B77-10152 01

FREQUENCY MODULATION

Improving FM transmitter power and
efficiency
M-FS-23517 B77-10360 02

FREQUENCY MULTIPLIERS

Logic-state-change indicator and
frequency doubler
GSFC-12169 B77-10021 01

'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01

FREQUENCY STABILITY

Ultrastable-frequency distribution
system
NPO-13836 B77-10031 02

Digital frequency-offset detector
MSC-16358 B77-10152 01

FREQUENCY STANDARDS

Ultrastable-frequency distribution system
NPO-13836 B77-10031 02

FREQUENCY SYNCHRONIZATION

Ultrastable-frequency distribution system
NPO-13836 B77-10031 02
Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01

FREQUENCY SYNTHESIZERS

FM oscillator has improved deviation linearity
M-FS-23562 B77-10011 01
Burst simulator for laser-Doppler velocimeter
LANGLEY-11859 B77-10048 03

FRESNEL DIFFRACTION

Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03

FRICTION

Measurement of friction and wear
LEWIS-12910 B77-10429 07

FRICTION DRAG

Inexpensive mass flowmeter
M-FS-23528 B77-10101 06

FRICTION REDUCTION

Magnetically-controlled bearing lubrication
M-FS-23009 B77-10231 07

FUEL CELLS

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04
Hollow-fiber H₂/O₂ fuel cell
NPO-13732 B77-10175 03
Improved fuel cell
M-FS-23797 B77-10377 03

FUEL INJECTION

Engine injectors
LEWIS-12846 B77-10222 06
Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07

FUEL SYSTEMS

Hydraulic pressure stabilization and 'Pogo' suppression
M-FS-19287 B77-10105 06

FUEL TANK PRESSURIZATION

Pressurization systems
LEWIS-12845 B77-10221 06

FUEL TANKS

Cryogenic liquid-level detector
M-FS-23253 B77-10410 06

FUELS

Fuel from wastes helps power diesel engines
MSC-16598 B77-10125 07
Low-temperature coal desulfurization
NPO-13937 B77-10166 03

FURNACES

Extraction of trace elements from ores
HQN-10875 B77-10079 04

FUSION WELDING

Technology of welding aluminum alloys-II
MSC-18082 B77-10432 08
Technology of welding aluminum alloys-III
MSC-18083 B77-10433 08
Technology of welding aluminum alloys-IV
MSC-18084 B77-10434 08

G

GALLIUM ARSENIDES

Simpler process produces more-efficient solar cell
LANGLEY-12180 B77-10335 01
Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
Low-resistance contacts for GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01

GANTRY CRANES

High gantry for lifting and handling
GSFC-12235 B77-10316 07

GARMENTS

Cooling vest
MSC-16771 B77-10291 05
Liquid-circulating garment controls thermal balance
MSC-16727 B77-10294 05

GAS ANALYSIS

Portable mass spectrometer
NPO-13664 B77-10043 03
Laser-excited gas-component identifier
LANGLEY-12035 B77-10051 03

GAS COMPOSITION

Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03

GAS COOLING

Closed-cycle refrigerator for masers
NPO-13839 B77-10056 03
Removing CO₂ and moisture from air
MSC-14771 B77-10092 06

GAS DENSITY

Density measurements of trace gases
ARC-10760 B77-10168 03
Alignment tolerant Schlieren system
ARC-10971 B77-10179 03

GAS DETECTORS

Density measurements of trace gases
ARC-10760 B77-10168 03
Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06
Detection of hydrogen chloride gas in air
LANGLEY-12218 B77-10395 04

GAS DISSOCIATION

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04

GAS DYNAMICS

Atmospheric interaction plume
LANGLEY-12203 B77-10110 06

GAS EXCHANGE

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04

GAS FLOW

Low-power anemometer
LANGLEY-11473 B77-10103 06
Three-dimensional supersonic viscous flows
ARC-11087 B77-10115 06
Alignment tolerant Schlieren system
ARC-10971 B77-10179 03
Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06
Instrument measures dynamic pressure fluctuations
LEWIS-12808 B77-10300 06

GAS MASERS

Ultrastable-frequency distribution system
NPO-13836 B77-10031 02

Two pumps reduce maser weight
M-FS-23265 B77-10375 03
Measuring cryogenic-refrigerator cooling capacity
NPO-13435 B77-10411 06

GAS MIXTURES

Density measurements of trace gases
ARC-10760 B77-10168 03
Radioactive-gas separation technique
GSFC-12019 B77-10169 03

GAS PIPES

Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06

GAS PRESSURE

Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06
Instrument measures dynamic pressure fluctuations
LEWIS-12808 B77-10300 06

GAS RECOVERY

Radioactive-gas separation technique
GSFC-12019 B77-10169 03

GAS SPECTROSCOPY

Photoelectron spectroscopy by electron attachment
NPO-14078 B77-10376 03

GAS STREAMS

Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06

GAS TUNGSTEN ARC WELDING

Adaptive control for weld skate
M-FS-23620 B77-10127 07
Arc-starting aid for GTA welding
MSC-19495 B77-10322 08
Technology of welding aluminum alloys-I
MSC-18081 B77-10431 08
Technology of welding aluminum alloys-II
MSC-18082 B77-10432 08
Technology of welding aluminum alloys-III
MSC-18083 B77-10433 08
Technology of welding aluminum alloys-IV
MSC-18084 B77-10434 08

GAS TURBINE ENGINES

Particle trajectories in radial-inflow turbines
LEWIS-12561 B77-10309 06

GAS-LIQUID INTERACTIONS

Apparatus for determining surface tension
NPO-13294 B77-10408 06

GAS-METAL INTERACTIONS

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04
Hydrogen embrittlement of structural alloys
LEWIS-12767 B77-10080 04
Effects of hydrogen on iron/nickel/cobalt/alloy
M-FS-23369 B77-10285 04

GASEOUS DIFFUSION

Predicting hydrogen-storage capabilities of metals
NPO-13893 B77-10074 04

GASES

Density measurements of trace gases
ARC-10760 B77-10168 03
Radioactive-gas separation technique
GSFC-12019 B77-10169 03

GASKETS

- Fluid-connector selection
M-FS-23072 B77-10109 06
Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
Miniature diaphragm valve for medical equipment
LANGLEY-11775 B77-10398 05
- GATES (CIRCUITS)**
Bridge/amplifier configuration for switched arrays
LANGLEY-11652 B77-10009 01
Time-division multiplexer uses digital gates
KSC-10878 B77-10032 02
- GEIGER COUNTERS**
Large-area radiation counters for low-level detection
M-FS-23304 B77-10379 03
- GEODESY**
Edge-following algorithm for tracking geological features
LANGLEY-12051 B77-10328 09
- GETTERS**
Cartridge getter for vacuum jacketing
MSC-16610 B77-10230 07
- GLASS**
High-temperature glass and glass coatings
ARC-11051 B77-10067 04
- GLASS COATINGS**
High-temperature glass and glass coatings
ARC-11051 B77-10067 04
- GLAZES**
High-temperature glass and glass coatings
ARC-11051 B77-10067 04
- GLOBAL AIR SAMPLING PROGRAM**
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
- GOLD**
Gold recovery process from polyimide film
MSC-16650 B77-10196 04
- GONIOMETERS**
Angle-indicating digital servo
ARC-11036 B77-10024 02
- GRAPHIC ARTS**
Mask and display program
M-FS-23625 B77-10355 01
- GRAPHITE**
Annular momentum-control device
LANGLEY-11914 B77-10117 07
Simplified systematic production of graphite/polymide prepreg
LANGLEY-12266 B77-10393 04
- GRINDING (MATERIAL REMOVAL)**
Sharpening ball-nose mill cutters
LANGLEY-10450 B77-10123 07
Restoration of bearings
LEWIS-12631 B77-10323 08
- GROOVES**
Adhesiveless and grooveless sealing technique
LANGLEY-11779 B77-10444 08
- GROOVING**
Sharpening ball-nose mill cutters
LANGLEY-10450 B77-10123 07
- GROUND HANDLING**
Monorail for production handling of large parachutes
KSC-11042 B77-10139 08
High gantry for lifting and handling
GSFC-12235 B77-10316 07

GROUND STATIONS

- Data acquisition for solar and wind energy
NPO-13908 B77-10146 09

GROUND SUPPORT EQUIPMENT

- High gantry for lifting and handling
GSFC-12235 B77-10316 07

GROUND-AIR-GROUND**COMMUNICATIONS**

- Emergency-vehicle VHF antenna
M-FS-23638 B77-10263 02

GUIDANCE SENSORS

- Autonomous rendezvous and feature detection system using TV imagery
LANGLEY-12050 B77-10356 02

GUST LOADS

- Defining structural limit zones
M-FS-23582 B77-10451 09

GYRATORS

- Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01

GYROSCOPES

- A spin-motor rotation detector
GSFC-11953 B77-10007 01

H**HALL EFFECT**

- Hall-effect toggle switch
MSC-16354 B77-10244 01
Magnetic rotary switch
MSC-16624 B77-10245 01
Brushless tachometer gives speed and direction
M-FS-23175 B77-10353 01

HAND (ANATOMY)

- Compact prosthetic hand
NPO-13906 B77-10085 05

HANDLING EQUIPMENT

- Overhead-handling, universal-positioning device
M-FS-23434 B77-10312 07
Flat-package DIP handling tool
GSFC-12201 B77-10315 07
High gantry for lifting and handling
GSFC-12235 B77-10316 07

HARDWARE

- Honeycomb chassis for electronic components
NPO-13891 B77-10237 08

HARNESSES

- Positioning bars for large wire harnesses
MSC-16420 B77-10440 08

HEAD FLOW

- Inexpensive mass flowmeter
M-FS-23528 B77-10101 06

HEARING

- Hearing-aid tester
MSC-14916 B77-10287 05

HEART DISEASES

- Real-time video display for angiocardigraphic studies
ARC-10985 B77-10293 05

HEART RATE

- Acquisition system for biomedical data
MSC-16144 B77-10209 05

HEAT EXCHANGERS

- Liquid-hydrogen boiloff reliquifier
KSC-11021 B77-10057 03
Absorption generator for solar-powered air-conditioner
M-FS-23417 B77-10091 06

- Removing CO₂ and moisture from air
MSC-14771 B77-10092 06
Heat exchanger for solar water heaters
M-FS-23711 B77-10365 03
Measuring cryogenic-refrigerator cooling capacity
NPO-13435 B77-10411 06

HEAT FLUX

- Vector sweep
LEWIS-12281 B77-10332 09
Ablative liner locates hotspots
MSC-16981 B77-10405 06

HEAT GENERATION

- Fuel burner with low nitrogen oxide formation
NPO-13958 B77-10218 06

HEAT PIPES

- Multiple-compartment venting
M-FS-23581 B77-10112 06
Heat pipe controls bearing temperature
LANGLEY-11846 B77-10227 07
Vapor-modulated heat pipe for improved temperature control
ARC-11001 B77-10412 06
Deployable heat-pipe radiator
M-FS-23292 B77-10413 06

HEAT PUMPS

- Closed-cycle refrigerator for masers
NPO-13839 B77-10056 03
Improving efficiency of existing air-conditioning
GSFC-12217 B77-10090 06

HEAT RADIATORS

- Deployable heat-pipe radiator
M-FS-23292 B77-10413 06

HEAT SHIELDING

- Improved intumescent coating
ARC-11042 B77-10068 04
Heat-moderating filler for intumescent coatings
ARC-11043 B77-10069 04
Resilient thermal barrier for high temperatures
MSC-16338 B77-10198 04

HEAT SINKS

- Isothermal Optical system
GSFC-12059 B77-10053 03

HEAT STORAGE

- 'Solar ponds'
NPO-13581 B77-10276 03

HEAT TRANSFER

- Multiple-compartment venting
M-FS-23581 B77-10112 06
Fuel burner with low nitrogen oxide formation
NPO-13958 B77-10218 06
Fast-response cloud chamber
M-FS-23588 B77-10275 03
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
Deployable heat-pipe radiator
M-FS-23292 B77-10413 06

HEAT TRANSFER COEFFICIENTS

- Improved accuracy with phase-change paints
LANGLEY-12025 B77-10212 06

HEAT TRANSMISSION

- Multiple-compartment venting
M-FS-23581 B77-10112 06

HEAT TREATMENT

- Improved radiant-heat oven
MSC-16761 B77-10304 06

HEATING

- Improved accuracy with phase-change paints
LANGLEY-12025 B77-10212 06

HEATING EQUIPMENT

Improving efficiency of existing air-conditioning
GSFC-12217 877-10090 06
Shrink tubing identifier
MSC-16430 877-10130 08
Window-mounted auxiliary solar heater
M-FS-23719 877-10277 03
Heat exchanger for solar water heaters
M-FS-23711 877-10365 03

HELICAL ANTENNAS

Emergency-vehicle VHF antenna
M-FS-23638 877-10263 02

HELIUM-NEON LASERS

Nuclear-pumped gas lasers
LANGLEY-12131 877-10047 03

HIGH CURRENT

Recording-tape lightning detector
KSC-11057 877-10359 02

HIGH RESOLUTION

Mass spectrometer has wide angular acceptance
NPO-14111 877-10170 03

HIGH STRENGTH

Tough strong iron alloys for cryogenic service
LEWIS-12726 877-10281 04

HIGH TEMPERATURE TESTS

Improved radiant-heat oven
MSC-16761 877-10304 06

HOLDERS

Vacuum mounting for piezoelectric transducers
MSC-16480 877-10313 07

HONEYCOMB CORES

Extruded edge members for honeycombs
MSC-16428 877-10238 08

HONEYCOMB STRUCTURES

Strong lightweight battery housing
M-FS-23079 877-10004 01
Dynamic stability of multilayer sandwich plates
NPO-11625 877-10108 06
Honeycomb chassis for electronic components
NPO-13891 877-10237 08
Extruded edge members for honeycombs
MSC-16428 877-10238 08
Interpreting honeycomb climbing-drum peel tests
M-FS-23319 877-10298 06
Controlled-porosity composite materials
LANGLEY-12115 877-10388 04
Cast-in-place grommets for honeycomb substrates
NPO-13868 877-10445 08

HONING

Sharpening ball-nose mill cutters
LANGLEY-10450 877-10123 07

HORIZONTAL FLIGHT

Trim conditions of mated vehicles
MSC-16188 877-10111 06

HORN ANTENNAS

Collapsible corrugated horn antenna
LANGLEY-11745 877-10018 01

HOT SURFACES

Ablative liner locates hotspots
MSC-16981 877-10405 06

HOT-FILM ANEMOMETERS

Low-power anemometer
LANGLEY-11473 877-10103 06

HOT-WIRE ANEMOMETERS

Low-power anemometer
LANGLEY-11473 877-10103 06

HOUSINGS

Strong lightweight battery housing
M-FS-23079 877-10004 01
Single-fill-point battery reservoir
M-FS-16801 877-10005 01

HUMAN FACTORS ENGINEERING

Liquid-circulating garment controls thermal balance
MSC-16727 877-10294 05

HUMAN TOLERANCES

Liquid-circulating garment controls thermal balance
MSC-16727 877-10294 05

HUMIDITY MEASUREMENT

Improved dewpoint-probe calibration
MSC-16811 877-10406 06

HYBRID CIRCUITS

Flexible foam masking for parylene coating
M-FS-23129 877-10138 08
Thermal-impedance test for hybrid power devices
MSC-16643 877-10153 01

HYBRID COMPUTERS

Advanced general-purpose computer
M-FS-23531 877-10165 02

HYDRAULIC ANALOGIES

Fluid-line math model
MSC-16230 877-10223 06

HYDRAULIC CONTROL

Automatic channel trimming for control systems: A concept
MSC-16027 877-10161 02

HYDRAULIC EQUIPMENT

Hydraulic pressure stabilization and 'Pogo' suppression
M-FS-19287 877-10105 06
Fluid-line math model
MSC-16230 877-10223 06
Thermal hydraulic analyzer
MSC-16797 877-10419 06
Self-aligning valve poppet and seat
LANGLEY-11623 877-10426 07

HYDRAULIC FLUIDS

Compressibility measurement of fluid-system ullage
MSC-16640 877-10299 06

HYDROCARBON FUELS

Liquefied natural gas (LNG) safety
LEWIS-12720 877-10147 09

HYDROGEN

Thermochemical-photolytic production of H2 and O2 from water
LANGLEY-12118 877-10187 04

HYDROGEN CHLORIDES

Detection of hydrogen chloride gas in air
LANGLEY-12218 877-10395 04

HYDROGEN EMBRITTLEMENT

Predicting hydrogen-storage capabilities of metals
NPO-13893 877-10074 04
Hydrogen embrittlement of structural alloys
LEWIS-12767 877-10080 04
Effects of hydrogen on iron/nickel/cobalt/alloy
M-FS-23369 877-10285 04
Neutron radiographic testing for hydrogen embrittlement
M-FS-24193 877-10407 06

HYDROGEN OXYGEN FUEL CELLS

Hollow-fiber H2/O2 fuel cell
NPO-13732 877-10175 03

HYDROGEN-BASED ENERGY

Predicting hydrogen-storage capabilities of metals
NPO-13893 877-10074 04
Closed-cycle hydrogen-fueled engine
NPO-13763 877-10119 07

HYPERSONIC AIRCRAFT

Integrated temperature sensor
LANGLEY-12056 877-10229 07

HYPERSONIC FLOW

Steady-state super/hypersonic inviscid flow
LANGLEY-11891 877-10113 06

HYPERSONIC VEHICLES

Steady-state super/hypersonic inviscid flow
LANGLEY-11891 877-10113 06

HYPERSONICS

Atmospheric interaction plume
LANGLEY-12203 877-10110 06

I

ICE PREVENTION

Flexible thermal laminate
MSC-12662 877-10387 04

IDENTIFYING

Shrink tubing identifier
MSC-16430 877-10130 08
Semiautomatic labeling of small wires
MSC-16233 877-10233 08

ILLUMINANCE

Solar radiation shadow detector
M-FS-23546 877-10037 03

ILLUMINATING

Demand-controlled lighting
KSC-11010 877-10023 02
Fireman's lamp
M-FS-23783 877-10305 06

IMAGE CORRELATORS

Multispectral image processor
MSC-16253 877-10172 03
Earth resources interactive processing system
MSC-16004 877-10183 03
Multispectral data analysis
MSC-16322 877-10224 06
Image registration using binary boundary maps
M-FS-23043 877-10450 09

IMAGE DISSECTOR TUBES

High-voltage capacitor-coupling circuit
MSC-16034 877-10013 01

IMAGE ENHANCEMENT

Improved method of signature extraction
LANGLEY-12101 877-10033 02
Autonomous rendezvous and feature detection system using TV imagery
LANGLEY-12050 877-10356 02

IMAGE INTENSIFIERS

Calibration faceplate for x-ray image intensifiers
ARC-11146 877-10399 05
Alignment tool for X-ray image intensifiers
ARC-11017 877-10400 05

IMAGE TRANSDUCERS

Laser produces color images from digital data
GSFC-12198 877-10271 03

IMAGERY

Field-of-view divider
MSC-16106 877-10050 03

- Microcircuit photography technique
GSFC-12199 B77-10134 08
Shuttle avionics visual display
MSC-16591 B77-10241 09
- IMAGING TECHNIQUES**
Acoustic imaging system
NPO-13888 B77-10046 03
Field-of-view divider
MSC-16106 B77-10050 03
Multispectral image processor
MSC-16253 B77-10172 03
Laser produces color images from digital data
GSFC-12198 B77-10271 03
Autonomous rendezvous and feature detection system using TV imagery
LANGLEY-12050 B77-10356 02
Alinement tool for X-ray image intensifiers
ARC-11017 B77-10400 05
Obtaining a tomographic image from transmission projections
NPO-13739 B77-10449 09
- IMIDES**
Improved processability of addition polyimides
LANGLEY-12054 B77-10078 04
- IMPACT STRENGTH**
Impact-resistant boron/aluminum composites
LEWIS-12472 B77-10184 04
- IMPEDANCE**
Low-inductance bus lines
MSC-16730 B77-10257 01
- IMPEDANCE MATCHING**
Low-inductance bus lines
MSC-16730 B77-10257 01
- IMPLANTED ELECTRODES (BIOLOGY)**
Skin-implant multiwire connector
KSC-11030 B77-10082 05
Percutaneous and skeletal biocarbon implants
M-FS-23666 B77-10089 05
Multichannel implantable telemetry system
ARC-11079 B77-10288 05
Longitudinally-vibrating surgical microelectrode
NPO-13910 B77-10292 05
- IMPREGNATING**
Vacuum-assisted impregnation of materials
MSC-16785 B77-10317 08
- IMPURITIES**
Quantitative measurement of surface contamination
M-FS-16679 B77-10217 06
- INCLUSIONS**
Ultrasonic strength evaluation of fiber-reinforced composites
LEWIS-12769 B77-10386 04
- INCONEL (TRADEMARK)**
Effects of hydrogen on iron/nickel/cobalt/alloy
M-FS-23369 B77-10285 04
Ammonia-compatible elastomers and alloys
MSC-16559 B77-10394 04
- INDEXES (RATIOS)**
Electro-optically-indexed microwave switch
NPO-11851 B77-10017 01
- INDICATING INSTRUMENTS**
Drug-dosage indicator
GSFC-12139 B77-10210 05
- INDUCTANCE**
Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01
- INDUCTION MOTORS**
Save power in AC induction motors
M-FS-23280 B77-10154 01
Gearless speed-reduction motor
GSFC-12138 B77-10311 07
Step motor damping for high-inertia loads
GSFC-11871 B77-10425 07
- INDUCTORS**
Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01
- INDUSTRIAL SAFETY**
Liquefied natural gas (LNG) safety
LEWIS-12720 B77-10147 09
- INERTIA**
Step motor damping for high-inertia loads
GSFC-11871 B77-10425 07
- INFLATABLE STRUCTURES**
Rigidified inflatable structures
MSC-16069 B77-10136 08
Detecting gas leaks in propellant lines
M-FS-23404 B77-10215 06
'Either-side-up' inflatable liferaft
LANGLEY-10241 B77-10417 06
- INFORMATION DISSEMINATION**
Document retrieval and reporting
LEWIS-12401 B77-10334 09
- INFORMATION RETRIEVAL**
Document retrieval and reporting
LEWIS-12401 B77-10334 09
- INFORMATION THEORY**
Efficient bit-error detecting code
KSC-11039 B77-10363 02
- INFRARED DETECTORS**
Infrared temperature maps of EHD lubrication
LEWIS-12685 B77-10097 06
Density measurements of trace gases
ARC-10760 B77-10168 03
Radiometer gives true absorption and emission coefficients
NPO-13677 B77-10273 03
- INFRARED FILTERS**
Infrared temperature maps of EHD lubrication
LEWIS-12685 B77-10097 06
- INFRARED INSPECTION**
Infrared temperature maps of EHD lubrication
LEWIS-12685 B77-10097 06
- INFRARED RADIOMETERS**
Null-balancing microwave radiometer
LANGLEY-11130 B77-10040 03
- INFRARED SPECTROMETERS**
Beam-splitter for infrared detection of pollutants
LANGLEY-12073 B77-10054 03
- INGESTION (BIOLOGY)**
Biological-activity monitor
NPO-14089 B77-10208 05
- INITIATORS (EXPLOSIVES)**
Electrically-nonlinear composite material
NPO-13858 B77-10284 04
- INJECTORS**
Engine injectors
LEWIS-12846 B77-10222 06
Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07
- INKS**
Inkjet color-printer control interface
LANGLEY-12103 B77-10265 02
- INORGANIC COATINGS**
Humidity-resistant black-nickel coatings
M-FS-23650 B77-10077 04
- INSOLATION**
Simple device measures solar radiation
M-FS-23751 B77-10366 03
- INSPECTION**
Particle Impact Noise Detection (PIND) test
MSC-16208 B77-10099 06
Nondestructive evaluation
LEWIS-12766 B77-10107 06
Inspection tool for butt-welded tubing
NPO-13975 B77-10235 08
- INSTALLING**
Cable-clamp installation tool
NPO-13976 B77-10439 08
- INSTRUMENT COMPENSATION**
Improved load-cell compensation
MSC-16466 B77-10214 06
Improved dewpoint-probe calibration
MSC-16811 B77-10406 06
- INSULATION**
Transducer for ultrasonic inspection of porous materials
MSC-19671 B77-10093 06
Potting procedure for electronic components
MSC-16290 B77-10324 08
- INSULATORS**
ESCA measurement of insulator surfaces
NPO-13772 B77-10076 04
Radiation-resistant, electrically insulating cermet
NPO-13120 B77-10189 04
- INTEGRATED CIRCUITS**
Optical integrated-circuit tester
NPO-13282 B77-10098 06
Low-insertion-resistance current monitor
GSFC-12278 B77-10258 01
Complementary DMOS/VMOS integrated-circuit-structure
GSFC-12190 B77-10340 01
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06
- INTEGRATORS**
Gain and Phase-margin measurements
NPO-13296 B77-10025 02
- INTEGRITY**
Testing internal coatings in metal vessels
MSC-16532 B77-10403 06
- INTERFACES**
Inkjet color-printer control interface
LANGLEY-12103 B77-10265 02
- INTERFACIAL TENSION**
Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06
Apparatus for determining surface tension
NPO-13294 B77-10408 06
- INTERFERENCE DRAG**
Design and analysis of supersonic aircraft
LANGLEY-12237 B77-10422 06
- INTERNAL COMBUSTION ENGINES**
Closed-cycle hydrogen-fueled engine
NPO-13763 B77-10119 07
Nickel-copper-zirconium alloy for catalytic creactors
LEWIS-12245 B77-10188 04

INTERNAL PRESSURE

Influence of lubricant starvation of mechanical parts
LEWIS-12884 B77-10414 06

INTERPLANETARY FLIGHT

Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02

INVISID FLOW

Steady-state super/hypersonic inviscid flow
LANGLEY-11891 B77-10113 06
Three-dimensional supersonic viscous flows
ARC-11087 B77-10115 06

ION BEAMS

Mass spectrometer has wide angular acceptance
NPO-14111 B77-10170 03
Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08

Negative deuterium-ion source
NPO-14113 B77-10378 03

ION EXCHANGE MEMBRANE ELECTROLYTES

Hollow-fiber H₂/O₂ fuel cell
NPO-13732 B77-10175 03

ION IMPLANTATION

MIS diode structure in As+-implanted CdS
LANGLEY-12156 B77-10159 01

ION PUMPS

Two pumps reduce maser weight
M-FS-23265 B77-10375 03

ION SOURCES

Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08

IONIZATION

Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03

IONIZATION CHAMBERS

Simplified sensing for cloud chamber
MSC-14708 B77-10058 03
Fast-response cloud chamber
M-FS-23588 B77-10275 03

IONS

Mass spectrometer has wide angular acceptance
NPO-14111 B77-10170 03
Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03

IRON

Tough strong iron alloys for cryogenic service
LEWIS-12726 B77-10281 04

IRON ALLOYS

Tough strong iron alloys for cryogenic service
LEWIS-12726 B77-10281 04
Effects of hydrogen on iron/nickel/cobalt/alloy
M-FS-23369 B77-10285 04

ISOTOPE EFFECT

Superconducting thermometer for cryogenics
LANGLEY-12055 B77-10180 03

ITERATIVE NETWORKS

Bridge/amplifier configuration for switched arrays
LANGLEY-11652 B77-10009 01

J**JACKETS**

Use of miniature, single-wire, sheathed thermocouples
LEWIS-12436 B77-10104 06

JET ENGINES

Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07

JIGS

Positioning bars for large wire harnesses
MSC-16420 B77-10440 08

JOINTS (JUNCTIONS)

Detecting wire-bond failures
M-FS-23584 B77-10131 08
Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03
Disconnects, couplings, fittings, fixed joints, and seals
LEWIS-12948 B77-10430 07

JOULE-THOMSON EFFECT

Measuring cryogenic-refrigerator cooling capacity
NPO-13435 B77-10411 06

JUMPERS

Vibration-resistant PC board feedthrough
MSC-16371 B77-10234 08

JUNCTION DIODES

MIS diode structure in As+-implanted CdS
LANGLEY-12156 B77-10159 01

K**KINETICS**

Kinetic studies of stress-corrosion cracking
M-FS-23259 B77-10286 04

KOLMOGOROFF-SMIRNOFF TEST

Multivariate-normality goodness-of-fit tests
M-FS-23523 B77-10149 09

KRYPTON 85

Radioactive-gas separation technique
GSFC-12019 B77-10169 03

L**LADDERS**

Mass-balanced portable stairway
GSFC-12172 B77-10121 07

LAMINAR FLOW

Alignment tolerant Schlieren system
ARC-10971 B77-10179 03

LAMINATES

Dynamic stability of multilayer sandwich plates
NPO-11625 B77-10108 06
Method of laminating using a pneumatic anvil
LANGLEY-11850 B77-10135 08
A new polyimide laminating resin
LANGLEY-12211 B77-10194 04
Extruded edge members for honeycombs
MSC-16428 B77-10238 08
Ultrasonic strength evaluation of fiber-reinforced composites
LEWIS-12769 B77-10386 04

Flexible thermal laminate
MSC-12662 B77-10387 04
Improved silicone-rubber-to-silicon-rubber bonding
MSC-16419 B77-10389 04
Simplified systematic production of graphite/polymide prepreg
LANGLEY-12266 B77-10393 04

LAP JOINTS

Indirect resistance welding
LEWIS-12149 B77-10128 07

LASER DOPPLER VELOCIMETERS

Optical scanning system for laser velocimeter
LANGLEY-12143 B77-10269 03
Portable aerosol-particle counter
LEWIS-12130 B77-10278 03
Doppler techniques for measuring fluid velocities
M-FS-23289 B77-10279 03

LASER OUTPUTS

Multiple-laser-energy detection system
LANGLEY-12017 B77-10052 03

LASER PLASMAS

Nuclear-pumped gas lasers
LANGLEY-12131 B77-10047 03

LASER RANGE FINDERS

Fast, accurate rangefinder
NPO-13460 B77-10358 02

LASERS

Nuclear-pumped gas lasers
LANGLEY-12131 B77-10047 03
Burst simulator for laser-Doppler velocimeter
LANGLEY-11859 B77-10048 03
Laser-excited gas-component identifier
LANGLEY-12035 B77-10051 03
Isothermal Optical system
GSFC-12059 B77-10053 03
Electromagnetic power absorber
NPO-13830 B77-10174 03

LATHES

Sharpening ball-nose mill cutters
LANGLEY-10450 B77-10123 07

LEAD ALLOYS

Homogeneous eutectic of Pb-Sb
M-FS-23766 B77-10385 04

LEAKAGE

Leak detector uses ultrasonics
MSC-16803 B77-10409 06

LENS ANTENNAS

Collapsible corrugated horn antenna
LANGLEY-11745 B77-10018 01

LENS DESIGN

Hybrid optical/digital detector
M-FS-23439 B77-10061 03

LENSES

Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03
Inexpensive high-temperature solar collector
NPO-13979 B77-10178 03
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03

LEUKOCYTES

Isoelectric leukocyte focusing
M-FS-23271 B77-10084 05
Single-Donor Leukophoretic Technique
MSC-16297 B77-10205 05

LIFE (DURABILITY)

Life-test methodology for mechanical components
M-FS-23082 B77-10095 06
Use of miniature, single-wire, sheathed thermocouples
LEWIS-12436 B77-10104 06

LIFE RAFTS

- Rigidified inflatable structures
 MSC-16069 B77-10136 08
 'Either-side-up' inflatable liferaft
 LANGLEY-10241 B77-10417 06

LIFE SUPPORT SYSTEMS

- Removing CO₂ and moisture from air
 MSC-14771 B77-10092 06

LIFT

- Aircraft aerodynamics at high angles of attack
 ARC-11133 B77-10225 06

LIGHT EMISSION

- Diodes stabilize LED output
 MSC-16520 B77-10348 01

LIGHT EMITTING DIODES

- MIS diode structure in As+ implanted CdS
 LANGLEY-12156 B77-10159 01
 Diodes stabilize LED output
 MSC-16520 B77-10348 01

LIGHT MODULATION

- Electrically-controlled variable-color optical filters
 MSC-14944 B77-10049 03

LIGHT SCATTERING

- Portable aerosol-particle counter
 LEWIS-12130 B77-10278 03

LIGHT SOURCES

- Demand-controlled lighting
 KSC-11010 B77-10023 02

LIGHTING EQUIPMENT

- Demand-controlled lighting
 KSC-11010 B77-10023 02
 Spectrally-balanced chromatic approach-lighting system
 ARC-10990 B77-10060 03
 Fireman's lamp
 M-FS-23783 B77-10305 06

LIGHTNING

- Lightning-activated electrical ground for cable shields
 MSC-12745 B77-10019 01
 Recording-tape lightning detector
 KSC-11057 B77-10359 02

LIMITER CIRCUITS

- Rate-of-change limiter for quantized signals
 M-FS-16406 B77-10362 02

LINEAR RECEIVERS

- Wide-dynamic-range detector
 GSFC-12149 B77-10151 01

LINEARITY

- Noise adding radiometer improvement
 NPO-13108 B77-10039 03
 Wide-dynamic-range detector
 GSFC-12149 B77-10151 01

LIQUEFIED GASES

- Liquid-hydrogen boiloff reliquifier
 KSC-11021 B77-10057 03
 Cryogenic liquid-level detector
 M-FS-23253 B77-10410 06

LIQUEFIED NATURAL GAS

- Liquefied natural gas (LNG) safety
 LEWIS-12720 B77-10147 09

LIQUID AMMONIA

- Ammonia-compatible elastomers and alloys
 MSC-16559 B77-10394 04

LIQUID COOLING

- Cooling vest
 MSC-16771 B77-10291 05
 Liquid-circulating garment controls thermal balance
 MSC-16727 B77-10294 05

LIQUID FLOW

- Effects of oscillating magnetic fields on liquids
 M-FS-15235 B77-10063 03
 Inexpensive mass flowmeter
 M-FS-23528 B77-10101 06
 Hydraulic pressure stabilization and 'Pogo' suppression
 M-FS-19287 B77-10105 06

LIQUID HYDROGEN

- Liquid-hydrogen boiloff reliquifier
 KSC-11021 B77-10057 03

LIQUID LEVELS

- Cryogenic liquid-level detector
 M-FS-23253 B77-10410 06

LIQUID OXYGEN

- Liquid-oxygen compatible, flame-resistant coating.
 KSC-11020 B77-10192 04

LIQUID PHASES

- Simpler process produces more-efficient solar cell
 LANGLEY-12180 B77-10335 01

LIQUID PROPELLANT ROCKET ENGINES

- Engine injectors
 LEWIS-12846 B77-10222 06

LIQUID ROCKET PROPELLANTS

- Dynamic calibration of flowmeter
 LANGLEY-12023 B77-10100 06
 Engine injectors
 LEWIS-12846 B77-10222 06

LIQUID-GAS MIXTURES

- Integrated temperature sensor
 LANGLEY-12056 B77-10229 07

LIQUIDS

- Determining critical temperatures and volumes
 NPO-13405 B77-10070 04
 Determining viscosities of liquids
 NPO-13406 B77-10071 04

LOADING MOMENTS

- Finite-element structural analysis
 MSC-16320 B77-10148 09

LOADS (FORCES)

- Fatigue-failure load indicator
 LANGLEY-12027 B77-10213 06

LOGIC CIRCUITS

- Bridge/amplifier configuration for switched arrays
 LANGLEY-11652 B77-10009 01
 Logic-state-change indicator and frequency doubler
 GSFC-12169 B77-10021 01
 Three-level signal sampler has automatic threshold
 NPO-14042 B77-10157 01
 Record dielectric breakdown automatically
 NPO-13599 B77-10216 06
 Individual control of relays in a matrix
 NPO-14095 B77-10246 01
 Versatile solid-state relay
 M-FS-23632 B77-10247 01
 Changing NRZ data to biphasic logic
 MSC-16688 B77-10268 02

LOOPS

- Vibration-resistant PC board feedthrough
 MSC-16371 B77-10234 08

LOUDSPEAKERS

- Double-duty loudspeaker
 MSC-16263 B77-10254 01

LOW COST

- 'Tubless' flat-plate solar collector
 NPO-13897 B77-10368 03

LOW FREQUENCIES

- Aircraft-noise synthesizer
 LANGLEY-11858 B77-10028 02

LOW GRAVITY MANUFACTURING

- The processing of materials in outer space
 M-FS-23695 B77-10240 08

LOW NOISE

- Biotelemetry system for ambulatory patients
 ARC-11142 B77-10401 05

LOW TEMPERATURE TESTS

- Mechanical properties of low-nickel stainless steel
 M-FS-23543 B77-10396 04

LUBRICANTS

- Magnetically-controlled bearing lubrication
 M-FS-23009 B77-10231 07
 Compressibility measurement of fluid-system ullage
 MSC-16640 B77-10299 06
 Determining minimum lubrication film for machine parts
 LEWIS-12885 B77-10415 06

LUBRICATION

- Magnetically-controlled bearing lubrication
 M-FS-23009 B77-10231 07
 Influence of lubricant starvation of mechanical parts
 LEWIS-12884 B77-10414 06

LUMINAIRES

- Demand-controlled lighting
 KSC-11010 B77-10023 02
 Improved radiant-heat oven
 MSC-16761 B77-10304 06
 Fireman's lamp
 M-FS-23783 B77-10305 06

LUMINOUS INTENSITY

- Simplified ozone detection by chemiluminescence
 LANGLEY-11405 B77-10280 04

LUNAR RANGEFINDING

- Fast, accurate rangefinder
 NPO-13460 B77-10358 02

M**MACH NUMBER**

- Transonic flow about airfoils
 LANGLEY-12265 B77-10421 06

MACHINE TOOLS

- Plaster core washout tool
 MSC-16635 B77-10314 07
 Drilling technique for crystals
 M-FS-23580 B77-10320 08

MACHINING

- Drilling technique for crystals
 M-FS-23580 B77-10320 08
 Adding through-bolt holes to pin-fin cold plates
 MSC-16421 B77-10441 08

MAGNET COILS

- Double-duty loudspeaker
 MSC-16263 B77-10254 01

MAGNETIC DOMAINS

- Bias-field equalizer for bubble memories
 M-FS-23189 B77-10253 01

MAGNETIC FIELDS

- Effects of oscillating magnetic fields on liquids
 M-FS-15235 B77-10063 03

- Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01
- MAGNETIC STORAGE**
Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01
- MAGNETIC SUSPENSION**
Annular momentum-control device
LANGLEY-11914 B77-10117 07
Flat-package DIP handling tool
GSFC-12201 B77-10315 07
- MAGNETIC TAPES**
Recording-tape lightning detector
KSC-11057 B77-10359 02
- MAGNETIC TRANSDUCERS**
Angle-indicating digital servo
ARC-11036 B77-10024 02
- MAGNETORESISTIVITY**
DC transformer uses magnetoresistors
M-FS-23659 B77-10255 01
- MAGNETS**
Skin-implant multiwire connector
KSC-11030 B77-10082 05
Magnetic rotary switch
MSC-16624 B77-10245 01
Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01
- MAINTAINABILITY**
Choosing the right connector
M-FS-23785 B77-10354 01
- MAMMARY GLANDS**
Ultrasonic-mammography apparatus
NPO-13935 B77-10207 05
- MAN MACHINE SYSTEMS**
Rotating-vector TV cursor
MSC-16119 B77-10055 03
Multispectral image processor
MSC-16253 B77-10172 03
- MANDRELS**
Plaster core washout tool
MSC-16635 B77-10314 07
- MANIPULATORS**
Automatic channel trimming for control systems: A concept
MSC-16027 B77-10161 02
Compact reliable multiaxis pivot
M-FS-23311 B77-10211 05
- MANNED ORBITAL TELESCOPES**
Anastigmatic three-mirror telescope
M-FS-23675 B77-10373 03
- MANPOWER**
PERT TIME III
LANGLEY-11887 B77-10333 09
- MARKING**
Shrink tubing identifier
MSC-16430 B77-10130 08
Semiautomatic labeling of small wires
MSC-16233 B77-10233 08
- MASERS**
Closed-cycle refrigerator for masers
NPO-13839 B77-10056 03
- MASKING**
Printing circuits without a mask
NPO-11758 B77-10129 07
Flexible foam masking for parylene coating
M-FS-23129 B77-10138 08
- MASS SPECTROMETERS**
Portable mass spectrometer
NPO-13664 B77-10043 03
Mass spectrometer has wide angular acceptance
NPO-14111 B77-10170 03
- MASS SPECTROSCOPY**
Mass spectrometry chemi-ionization
NPO-13857 B77-10171 03
- MATERIALS HANDLING**
Extraction of trace elements from ores
HQN-10875 B77-10079 04
Monorail for production handling of large parachutes
KSC-11042 B77-10139 08
Flat-package DIP handling tool
GSFC-12201 B77-10315 07
- MATERIALS RECOVERY**
Extraction of trace elements from ores
HQN-10875 B77-10079 04
Collectors for vacuum-cleaning lines
MSC-17011 B77-10142 08
Gold recovery process from polyimide film
MSC-16650 B77-10196 04
- MATERIALS TESTS**
Nondestructive evaluation
LEWIS-12766 B77-10107 06
- MATRICES (CIRCUITS)**
Individual control of relays in a matrix
NPO-14095 B77-10246 01
- MEASURING INSTRUMENTS**
Angle-indicating digital servo
ARC-11036 B77-10024 02
Differential sound-level meter
LANGLEY-12106 B77-10094 06
Quantitative measurement of the 'feel' of fabric
LANGLEY-12147 B77-10102 06
Tube-bending scale/protractor
MSC-16272 B77-10143 08
Data acquisition for solar and wind energy
NPO-13908 B77-10146 09
Radiometer gives true absorption and emission coefficients
NPO-13677 B77-10273 03
Obtaining a tomographic image from transmission projections
NPO-13739 B77-10449 09
- MECHANICAL DEVICES**
Influence of lubricant starvation of mechanical parts
LEWIS-12884 B77-10414 06
Determining minimum lubrication film for machine parts
LEWIS-12885 B77-10415 06
- MECHANICAL DRIVES**
Compact prosthetic hand
NPO-13906 B77-10085 05
- MECHANICAL PROPERTIES**
Controlling stress-corrosion cracking
M-FS-23416 B77-10200 04
Properties of doped cesium iodide crystals
M-FS-23148 B77-10202 04
Mechanical properties of low-nickel stainless steel
M-FS-23543 B77-10396 04
- MECHANICAL SHOCK**
Vibration improves single-crystal yield
M-FS-23683 B77-10133 08
Vibration-resistant PC board feedthrough
MSC-16371 B77-10234 08
- MEDICAL ELECTRONICS**
Hearing-aid tester
MSC-14916 B77-10287 05
- MEDICAL EQUIPMENT**
Rotational joint for prosthetic leg
KSC-11004 B77-10083 05
- Real-time video display for angiocardigraphic studies
ARC-10985 B77-10293 05
- MEDICAL SERVICES**
Emergency-vehicle VHF antenna
M-FS-23638 B77-10263 02
Versatile communications terminal
MSC-16823 B77-10397 05
- MEMBRANE STRUCTURES**
Design of minimum-weight structures
LANGLEY-12209 B77-10310 06
- MERCATOR PROJECTION**
WOLF contouring and plotting package
GSFC-12326 B77-10453 09
- METABOLISM**
Biological-activity monitor
NPO-14089 B77-10208 05
- METAL BONDING**
Welding single-crystal silicon to molybdenum
NPO-13735 B77-10341 01
Bonding aluminum beam leads
M-FS-23183 B77-10443 08
Welding thermocouples to columbium
MSC-16676 B77-10446 08
- METAL COATINGS**
Humidity-resistant black-nickel coatings
M-FS-23650 B77-10077 04
Metallic coating reduces thermal stress
MSC-16814 B77-10391 04
- METAL COMBUSTION**
Paralinear oxidation behavior
LEWIS-12677 B77-10081 04
- METAL FATIGUE**
Hydrogen embrittlement of structural alloys
LEWIS-12767 B77-10080 04
Controlling stress-corrosion cracking
M-FS-23416 B77-10200 04
Fatigue-failure load indicator
LANGLEY-12027 B77-10213 06
- METAL FILMS**
Capacitive connectors for digital-data lines
GSFC-12238 B77-10250 01
- METAL JOINTS**
Indirect resistance welding
LEWIS-12149 B77-10128 07
- METAL OXIDE SEMICONDUCTORS**
Fast measurement of MOS capacitors
NPO-13892 B77-10020 01
Record dielectric breakdown automatically
NPO-13599 B77-10216 06
Safe handling practices for electrostatic-sensitive devices
MSC-16642 B77-10260 01
Complementary DMOS/VMOS integrated-circuit-structure
GSFC-12190 B77-10340 01
- METAL POWDER**
Metal/polyvinyl pyridine catalytic beads
NPO-13912 B77-10384 04
- METAL SHELLS**
Testing internal coatings in metal vessels
MSC-16532 B77-10403 06
- METAL SURFACES**
Pretreatment for strong aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04
Adhesiveless and grooveless sealing technique
LANGLEY-11779 B77-10444 08

METAL WORKING

Adding through-bolt holes to pin-fin cold plates

MSC-16421 877-10441 08

METAL-GAS SYSTEMS

Predicting hydrogen-storage capabilities of metals

NPO-13893 877-10074 04

Effects of hydrogen on

iron/nickel/cobalt/alloy

M-FS-23369 877-10285 04

METAL-METAL BONDING

Pretreatment for strong

aluminum/epoxy/aluminum bonds

GSFC-12232 877-10195 04

METALLIZING

Metallic coating reduces thermal stress

MSC-16814 877-10391 04

METALS

Tough strong iron alloys for cryogenic service

LEWIS-12726 877-10281 04

METASTABLE STATE

Mass spectrometry chemi-ionization

NPO-13857 877-10171 03

METEOROLOGICAL INSTRUMENTS

Improved dewpoint-probe calibration

MSC-16811 877-10406 06

METEOROLOGY

Four-D global reference atmosphere

M-FS-23336 877-10066 03

METHANE

Liquefied natural gas (LNG) safety

LEWIS-12720 877-10147 09

MICROCRACKS

Radiographic detection of cracks

MSC-16541 877-10301 06

MICROELECTRONICS

Microcircuit photography technique

GSFC-12199 877-10134 08

'Printed-circuit' rectenna

NPO-13886 877-10261 02

Longitudinally-vibrating surgical

microelectrode

NPO-13910 877-10292 05

MICROMODULES

Detecting wire-bond failures

M-FS-23584 877-10131 08

MICROMOTORS

Commutator assembly technique

LANGLEY-11844 877-10132 08

MICROPARTICLES

Metal/polyvinyl pyridine catalytic beads

NPO-13912 877-10384 04

MICROPHONES

Density measurements of trace gases

ARC-10760 877-10168 03

Instrument measures dynamic pressure

fluctuations

LEWIS-12808 877-10300 06

MICROSCOPY

Process sharpens micrographic images

MSC-16846 877-10374 03

MICROSTRUCTURE

Microcircuit photography technique

GSFC-12199 877-10134 08

Process sharpens micrographic images

MSC-16846 877-10374 03

MICROWAVE AMPLIFIERS

Closed-cycle refrigerator for masers

NPO-13839 877-10056 03

MICROWAVE ANTENNAS

Collapsible corrugated horn antenna

LANGLEY-11745 877-10018 01

MICROWAVE EQUIPMENT

Collapsible corrugated horn antenna

LANGLEY-11745 877-10018 01

MICROWAVE FREQUENCIES

FM oscillator has improved deviation

linearity

M-FS-23562 877-10011 01

MICROWAVE PHOTOGRAPHY

Remote surface-height measurement

NPO-13862 877-10044 03

Subsurface 'radar' camera

NPO-13864 877-10045 03

MICROWAVE RADIOMETERS

Noise adding radiometer improvement

NPO-13108 877-10039 03

Null-balancing microwave radiometer

LANGLEY-11130 877-10040 03

MICROWAVE TRANSMISSION

'Printed-circuit' rectenna

NPO-13886 877-10261 02

MICROWAVES

Electromagnetic power absorber

NPO-13830 877-10174 03

MILLING (MACHINING)

Sharpening ball-nose mill cutters

LANGLEY-10450 877-10123 07

MINERALS

Extraction of trace elements from ores

HQN-10875 877-10079 04

MINICOMPUTERS

Electronic shaft-angle encoder

LEWIS-12832 877-10351 01

MINORITY CARRIERS

Measuring solar-cell quality

NPO-14100 877-10295 06

Simpler process produces more-efficient

solar cell

LANGLEY-12180 877-10335 01

MIRRORS

Isothermal Optical system

GSFC-12059 877-10053 03

MIS (SEMICONDUCTORS)

MIS diode structure in As⁺-implanted

CdS

LANGLEY-12156 877-10159 01

MOBILE MISSILE LAUNCHERS

Rotating mobile launcher

ARC-10979 877-10120 07

MODELS

Computer-aided manufacture of

sculptured objects

HQN-10914 877-10140 08

MODULES

Design and analysis of supersonic

aircraft

LANGLEY-12237 877-10422 06

MOIRE EFFECTS

Wide-field schlieren system

NPO-14174 877-10370 03

MOISTURE

Removing CO₂ and moisture from air

MSC-14771 877-10092 06

MOISTURE METERS

Improved dewpoint-probe calibration

MSC-16811 877-10406 06

MOLDING MATERIALS

Plaster core washout tool

MSC-16635 877-10314 07

MOLDS

Method of laminating using a pneumatic

anvil

LANGLEY-11850 877-10135 08

Molding cork sheets to complex shapes

M-FS-23626 877-10236 08

MOLECULAR EXCITATION

Laser-excited gas-component identifier

LANGLEY-12035 877-10051 03

MOLECULAR SPECTROSCOPY

Laser-excited gas-component identifier

LANGLEY-12035 877-10051 03

Mass spectrometry chemi-ionization

NPO-13857 877-10171 03

Photoelectron spectroscopy by electron

attachment

NPO-14078 877-10376 03

MOLLIER DIAGRAM

Steady-state super/hypersonic inviscid

flow

LANGLEY-11891 877-10113 06

MOLYBDENUM

Preparation of organosiloxy-molybdenum

monomer

M-FS-23704 877-10185 04

Welding single-crystal silicon to

molybdenum

NPO-13735 877-10341 01

MOMENT DISTRIBUTION

Finite-element structural analysis

MSC-16320 877-10148 09

MOMENTS OF INERTIA

TRIM-STAB-Aerospace vehicle trim and

stability

MSC-14927 877-10114 06

MOMENTUM

Angular momentum-control device

LANGLEY-11914 877-10117 07

MONITORS

Biological-activity monitor

NPO-14089 877-10208 05

Inexpensive solid-state monitoring

circuit

LEWIS-12848 877-10252 01

Low-insertion-resistance current

monitor

GSFC-12278 877-10258 01

Detection of hydrogen chloride gas in

air

LANGLEY-12218 877-10395 04

MONOMERS

Preparation of organosiloxy-molybdenum

monomer

M-FS-23704 877-10185 04

Soluble, thermally-stable aromatic

polyimides

LANGLEY-12092 877-10193 04

MONOSTABLE MULTIVIBRATORS

Logic-state-change indicator and

frequency doubler

GSFC-12169 877-10021 01

MOTION STABILITY

Adaptive control for weld skate

M-FS-23620 877-10127 07

MOTORS

Save power in AC induction motors

M-FS-23280 877-10154 01

Gearless speed-reduction motor

GSFC-12138 877-10311 07

MOUNTAINS

Solar-power mountain concept

NPO-13861 877-10177 03

MTBF

Use of miniature, single-wire, sheathed

thermocouples

LEWIS-12436 877-10104 06

Nondestructive evaluation

LEWIS-12766 877-10107 06

Detecting wire-bond failures

M-FS-23584 877-10131 08

Vibration-resistant PC board

feedthrough

MSC-16371 877-10234 08

MULTIPLEXING

Time-division multiplexer uses digital

gates

KSC-10878 877-10032 02

Bidirectional Amplifier

KSC-10856 877-10150 01

Multiplexed fiber-optic transmission system
KSC-11047 B77-10164 02
Advanced general-purpose computer
M-FS-23531 B77-10165 02
MULTIPROCESSING (COMPUTERS)
Advanced general-purpose computer
M-FS-23531 B77-10165 02
MULTISPECTRAL BAND SCANNERS
Acoustic imaging system
NPO-13888 B77-10046 03
Multispectral image processor
MSC-16253 B77-10172 03
Multispectral data analysis
MSC-16322 B77-10224 06
Edge-following algorithm for tracking geological features
LANGLEY-12051 B77-10328 09
MULTISPECTRAL PHOTOGRAPHY
Improved method of signature extraction
LANGLEY-12101 B77-10033 02
Classification accuracy improvement
LANGLEY-12102 B77-10329 09
Image registration using binary boundary maps
M-FS-23043 B77-10450 09
MULTIVARIATE STATISTICAL ANALYSIS
Multivariate-normality goodness-of-fit tests
M-FS-23523 B77-10149 09

N

NAVIER-STOKES EQUATION
Three-dimensional supersonic viscous flows
ARC-11087 B77-10115 06
NAVIGATION AIDS
Fast, accurate rangefinder
NPO-13460 B77-10358 02
NEUTRON ACTIVATION ANALYSIS
Whole-rock uranium analysis by fission-track activation
NPO-13483 B77-10383 04
NEUTRON IRRADIATION
Nuclear-pumped gas lasers
LANGLEY-12131 B77-10047 03
NEUTRON SCATTERING
Neutron radiographic testing for hydrogen embrittlement
M-FS-24193 B77-10407 06
NICKEL
Tough strong iron alloys for cryogenic service
LEWIS-12726 B77-10281 04
NICKEL ALLOYS
Effects of hydrogen on iron/nickel/cobalt/alloy
M-FS-23369 B77-10285 04
NICKEL COATINGS
Humidity-resistant black-nickel coatings
M-FS-23650 B77-10077 04
NICKEL ZINC BATTERIES
Flexible separator for alkaline batteries
LEWIS-12649 B77-10002 01
Rechargeable nickel-zinc batteries
LEWIS-12784 B77-10003 01
NIOBium
Welding thermocouples to columbium
MSC-16676 B77-10446 08
NIObium OXIDES
Anodic growth of niobium oxide
M-FS-23150 B77-10201 04
NITRATES
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
NITROGEN OXIDES
Fuel burner with low nitrogen oxide formation
NPO-13958 B77-10218 06
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
NODES (STANDING WAVES)
Accurate RF field monitoring in shielded enclosure
MSC-16325 B77-10096 06
NOISE MEASUREMENT
Three-level signal sampler has automatic threshold
NPO-14042 B77-10157 01
NOISE METERS
Acoustic imaging system
NPO-13888 B77-10046 03
NOISE POLLUTION
Aircraft-noise synthesizer
LANGLEY-11858 B77-10028 02
NOISE REDUCTION
High-voltage capacitor-coupling circuit
MSC-16034 B77-10013 01
Digital filter for voiceband noise
M-FS-23699 B77-10022 01
Beam-splitter for infrared detection of pollutants
LANGLEY-12073 B77-10054 03
Noise reduction in photomultiplier circuits
LANGLEY-12091 B77-10160 01
NOISE SPECTRA
Satellite-based interference analyzer
GSFC-12150 B77-10264 02
NONAQUEOUS ELECTROLYTES
Fireman's lamp
M-FS-23783 B77-10305 06
NONDESTRUCTIVE TESTS
Large-area soft X-ray imaging system
GSFC-12093 B77-10042 03
Transducer for ultrasonic inspection of porous materials
MSC-19671 B77-10093 06
Optical integrated-circuit tester
NPO-13282 B77-10098 06
Particle Impact Noise Detection (PIND) test
MSC-16208 B77-10099 06
Nondestructive evaluation
LEWIS-12766 B77-10107 06
Detecting wire-bond failures
M-FS-23584 B77-10131 08
Thermal-impedance test for hybrid power devices
MSC-16643 B77-10153 01
Inspection tool for butt-welded tubing
NPO-13975 B77-10235 08
Hearing-aid tester
MSC-14916 B77-10287 05
Radiographic detection of cracks
MSC-16541 B77-10301 06
Cost-effective actuator tester
MSC-16324 B77-10302 06
Ultrasonic strength evaluation of fiber-reinforced composites
LEWIS-12769 B77-10386 04
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06
Neutron radiographic testing for hydrogen embrittlement
M-FS-24193 B77-10407 06
Leak detector uses ultrasonics
MSC-16803 B77-10409 06

NONLINEARITY
Noise adding radiometer improvement
NPO-13108 B77-10039 03
NONNEWTONIAN FLUIDS
Tensile viscosities of non-Newtonian fluids
NPO-13973 B77-10197 04
NOTCH TESTS
Tube-weld inspection tool
NPO-13978 B77-10437 08
NOZZLE DESIGN
Printing circuits without a mask
NPO-11758 B77-10129 07
NOZZLE INSERTS
Heavy-duty sandblast nozzle
NPO-13823 B77-10141 08
Ablative liner locates hotspots
MSC-16981 B77-10405 06
NOZZLE WALLS
Heavy-duty sandblast nozzle
NPO-13823 B77-10141 08
NUCLEAR FUSION
Negative deuterium-ion source
NPO-14113 B77-10378 03
NUCLEAR RADIATION
Differential multi-MOSFET nuclear radiation sensor
MSC-14444 B77-10059 03
Radiation shielding methods
NPO-13923 B77-10065 03
NUCLEAR REACTIONS
Nuclear-pumped gas lasers
LANGLEY-12131 B77-10047 03
NUCLEAR REACTORS
Radiation-resistant, electrically insulating cermet
NPO-13120 B77-10189 04
NUMERICAL CONTROL
Noise adding radiometer improvement
NPO-13108 B77-10039 03
Optical integrated-circuit tester
NPO-13282 B77-10098 06
Adaptive control for weld skate
M-FS-23620 B77-10127 07
Computer-aided manufacture of sculptured objects
HQN-10914 B77-10140 08
Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01
NUTS (FASTENERS)
Floating nut for spacecraft application
M-FS-23248 B77-10427 07

O

O RING SEALS
Adhesiveless and grooveless sealing technique
LANGLEY-11779 B77-10444 08
OILS
Compressibility measurement of fluid-system ullage
MSC-16640 B77-10299 06
OMNIDIRECTIONAL ANTENNAS
Emergency-vehicle VHF antenna
M-FS-23638 B77-10263 02
OPERATIONAL AMPLIFIERS
Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01
OPTICAL COUPLING
Hybrid optical/digital detector
M-FS-23439 B77-10061 03

- Rotating optical coupler for signal transmission
NPO-14066 B77-10371 03
- OPTICAL DATA PROCESSING**
Improved method of signature extraction
LANGLEY-12101 B77-10033 02
Hybrid optical/digital detector
M-FS-23439 B77-10061 03
Stray optical-radiation suppression
M-FS-23495 B77-10064 03
Differential optical proximity detector
NPO-13939 B77-10274 03
Classification accuracy improvement
LANGLEY-12102 B77-10329 09
- OPTICAL DENSITY**
Alignment tolerant Schlieren system
ARC-10971 B77-10179 03
- OPTICAL EQUIPMENT**
Field-of-view divider
MSC-16106 B77-10050 03
Laser produces color images from digital data
GSFC-12198 B77-10271 03
Differential optical proximity detector
NPO-13939 B77-10274 03
Alignment tool for X-ray image intensifiers
ARC-11017 B77-10400 05
- OPTICAL ILLUSION**
Spectrally-balanced chromatic approach-lighting system
ARC-10990 B77-10060 03
- OPTICAL MEASURING INSTRUMENTS**
Solar radiation shadow detector
M-FS-23546 B77-10037 03
Optical proximity detector
NPO-13306 B77-10041 03
Isothermal Optical system
GSFC-12059 B77-10053 03
Stray optical-radiation suppression
M-FS-23495 B77-10064 03
Computer-aided manufacture of sculptured objects
HQN-10914 B77-10140 08
Faster optical-spectra recording and analysis
MSC-16729 B77-10270 03
Differential optical proximity detector
NPO-13939 B77-10274 03
- OPTICAL PROPERTIES**
Properties of doped cesium iodide crystals
M-FS-23148 B77-10202 04
- OPTICAL RADAR**
Multiple-laser-energy detection system
LANGLEY-12017 B77-10052 03
Multiline radar scan
M-FS-23252 B77-10267 02
- OPTICAL RANGE FINDERS**
Differential optical proximity detector
NPO-13939 B77-10274 03
- OPTICAL REFLECTION**
Optical retroreflector
M-FS-23282 B77-10372 03
- OPTICAL SCANNERS**
Optical integrated-circuit tester
NPO-13282 B77-10098 06
Optical scanning system for laser velocimeter
LANGLEY-12143 B77-10269 03
- OPTIMIZATION**
Design and analysis of supersonic aircraft
LANGLEY-12237 B77-10422 06
- ORGANIC CONVERSION)**
Fuel from wastes helps power diesel engines
MSC-16598 B77-10125 07
- ORTHICONS**
Field-of-view divider
MSC-16106 B77-10050 03
- OSCILLATORS**
FM oscillator has improved deviation linearity
M-FS-23562 B77-10011 01
Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01
Inexpensive solid-state monitoring circuit
LEWIS-12848 B77-10252 01
Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01
- OSMOSIS**
Control of electro-osmotic flow
M-FS-23554 B77-10283 04
- OUTGASSING**
Two pumps reduce maser weight
M-FS-23265 B77-10375 03
- Ovens**
Improved radiant-heat oven
MSC-16761 B77-10304 06
- OXALATES**
Preparation of zinc orthotitanate
M-FS-23345 B77-10186 04
- OXIDATION**
Paralinear oxidation behavior
LEWIS-12677 B77-10081 04
- OXIDATION RESISTANCE**
Oxidation-resistant cermet
NPO-13666 B77-10190 04
Stress, corrosion, and heat resistant cermet
NPO-13690 B77-10191 04
- OXIDE FILMS**
Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
- OXIDES**
Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08
- OXYGEN**
Thermochemical-photolytic production of H₂ and O₂ from water
LANGLEY-12118 B77-10187 04
- OZONE**
Simplified ozone detection by chemiluminescence
LANGLEY-11405 B77-10280 04
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
- OZONOMETRY**
Simplified ozone detection by chemiluminescence
LANGLEY-11405 B77-10280 04
- P**
- P.A.C.M. TELEMETRY**
Time-division multiplexer uses digital gates
KSC-10878 B77-10032 02
- P-N JUNCTIONS**
Production of large 'violet' solar cells
M-FS-23549 B77-10012 01
- Low-cost polycrystalline process for solar cells
GSFC-12022 B77-10014 01
Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
New process produces high-power Schottky diodes
LEWIS-12749 B77-10337 01
- PACKAGING**
Improved fuel cell
M-FS-23797 B77-10377 03
- PAINTS**
Preparation of zinc orthotitanate
M-FS-23345 B77-10186 04
Improved accuracy with phase-change paints
LANGLEY-12025 B77-10212 06
No-spill touchup paint container
MSC-16269 B77-10428 07
- PALLADIUM COMPOUNDS**
Cartridge getter for vacuum jacketing
MSC-16610 B77-10230 07
- PANELS**
Design of minimum-weight structures
LANGLEY-12209 B77-10310 06
- PARACHUTES**
Monorail for production handling of large parachutes
KSC-11042 B77-10139 08
- PARTICLE BEAMS**
Portable aerosol-particle counter
LEWIS-12130 B77-10278 03
- PARTICLE DENSITY (CONCENTRATION)**
Portable aerosol-particle counter
LEWIS-12130 B77-10278 03
- PARTICLE SIZE DISTRIBUTION**
Portable aerosol-particle counter
LEWIS-12130 B77-10278 03
Metal/polyvinyl pyridine catalytic beads
NPO-13912 B77-10384 04
- PARTICLE TRAJECTORIES**
Simplified sensing for cloud chamber
MSC-14708 B77-10058 03
Particle trajectories in radial-inflow turbines
LEWIS-12561 B77-10309 06
- PARTICULATE SAMPLING**
Particle Impact Noise Detection (PIND) test
MSC-16208 B77-10099 06
Airborne atmospheric sampling system
LEWIS-12949 B77-10380 03
- PATHOGENS**
Virus detection system
MSC-16098 B77-10203 05
- PATTERN RECOGNITION**
Earth resources interactive processing system
MSC-16004 B77-10183 03
Multispectral data analysis
MSC-16322 B77-10224 06
- PATTERN REGISTRATION**
Multispectral image processor
MSC-16253 B77-10172 03
Image registration using binary boundary maps
M-FS-23043 B77-10450 09
- PCM TELEMETRY**
Differential pulse-code modulation
MSC-12506 B77-10027 02
Multichannel implantable telemetry system
ARC-11079 B77-10288 05

PEARSON DISTRIBUTIONS

Multivariate-normality goodness-of-fit tests
M-FS-23523 B77-10149 09

PEELING

Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06

PERFORMANCE PREDICTION

Reliability analysis for data management systems
M-FS-23208 B77-10331 09
Calculating parts factors for redundant systems
M-FS-23413 B77-10448 09

PERMALLOYS (TRADEMARK)

Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01

PERMEABILITY

Controlled-porosity composite materials
LANGLEY-12115 B77-10388 04

PERT

PERT TIME III
LANGLEY-11887 B77-10333 09

PHASE CONTRAST

Optical proximity detector
NPO-13306 B77-10041 03

PHASE CONTROL

Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01

PHASE DEMODULATORS

Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01

PHASE DETECTORS

Four-quadrant phase detector
GSFC-12179 B77-10357 02

PHASE ERROR

Four-quadrant phase detector
GSFC-12179 B77-10357 02

PHASE LOCK DEMODULATORS

Extrasensitive phase-locked-loop circuit
MSC-16770 B77-10249 01

PHASE LOCKED SYSTEMS

Simplified command and range detection system
NPO-13753 B77-10026 02
Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01
Four-quadrant phase detector
GSFC-12179 B77-10357 02

PHASE SHIFT

Gain and Phase-margin measurements
NPO-13296 B77-10025 02
Four-quadrant phase detector
GSFC-12179 B77-10357 02

PHASE TRANSFORMATIONS

The processing of materials in outer space
M-FS-23695 B77-10240 08

PHENOLIC RESINS

Molding cork sheets to complex shapes
M-FS-23626 B77-10236 08

PHONOCARDIOGRAPHY

Acquisition system for biomedical data
MSC-16144 B77-10209 05

PHOTOCHEMICAL REACTIONS

Thermochemical-photolytic production of H₂ and O₂ from water
LANGLEY-12118 B77-10187 04

PHOTODECOMPOSITION

Thermochemical-photolytic production of H₂ and O₂ from water
LANGLEY-12118 B77-10187 04

PHOTODIODES

Solar-cell array design handbook
NPO-14106 B77-10182 03

PHOTOELECTRIC EMISSION

Photoelectron spectroscopy by electron attachment
NPO-14078 B77-10376 03

PHOTOELECTRONS

Photoelectron spectroscopy by electron attachment
NPO-14078 B77-10376 03

PHOTOGRAPHIC EQUIPMENT

Hybrid optical/digital detector
M-FS-23439 B77-10061 03
Laser produces color images from digital data
GSFC-12198 B77-10271 03

PHOTOGRAPHIC FILM

Obtaining a tomographic image from transmission projections
NPO-13739 B77-10449 09

PHOTOGRAPHIC PROCESSING

High-resolution X-ray recording and processing
LANGLEY-11722 B77-10381 03

PHOTOGRAPHIC PROCESSING EQUIPMENT

Laser produces color images from digital data
GSFC-12198 B77-10271 03

PHOTOGRAPHIC RECORDING

Laser produces color images from digital data
GSFC-12198 B77-10271 03

PHOTOGRAPHY

Microcircuit photography technique
GSFC-12199 B77-10134 08

PHOTOIONIZATION

Photoelectron spectroscopy by electron attachment
NPO-14078 B77-10376 03

PHOTOMETERS

Solar meter with silicon photocell
NPO-14136 B77-10243 01

PHOTOMICROGRAPHS

Microcircuit photography technique
GSFC-12199 B77-10134 08
Process sharpens micrographic images
MSC-16846 B77-10374 03

PHOTOMICROGRAPHY

Microcircuit photography technique
GSFC-12199 B77-10134 08

PHOTOMULTIPLIER TUBES

High-voltage capacitor-coupling circuit
MSC-16034 B77-10013 01
Noise reduction in photomultiplier circuits
LANGLEY-12091 B77-10160 01

PHOTORECONNAISSANCE

Multispectral data analysis
MSC-16322 B77-10224 06

PHOTOVOLTAIC CELLS

Solar meter with silicon photocell
NPO-14136 B77-10243 01
Solar cell measurements in the field
NPO-14067 B77-10296 06
Inexpensive silicon sheets for solar cells
NPO-14069 B77-10338 01

PHYSICAL CHEMISTRY

Estimating molar volume and expansion
NPO-13404 B77-10072 04

PICTURE TUBES

Rotating-vector TV cursor
MSC-16119 B77-10055 03

PIEZOELECTRIC TRANSDUCERS

Vacuum mounting for piezoelectric transducers
MSC-16480 B77-10313 07

PILOT PLANTS

Production of large 'violet' solar cells
M-FS-23549 B77-10012 01

PINHOLES

Testing internal coatings in metal vessels
MSC-16532 B77-10403 06
Leak detector uses ultrasonics
MSC-16803 B77-10409 06

PINS

Allowable bending loads for mechanical fasteners
M-FS-23430 B77-10297 06

PIPES (TUBES)

Indirect resistance welding
LEWIS-12149 B77-10128 07
Tube-bending scale/protractor
MSC-16272 B77-10143 08
Inspection tool for butt-welded tubing
NPO-13975 B77-10235 08

PITCH (INCLINATION)

Aircraft aerodynamics at high angles of attack
ARC-11133 B77-10225 06

PIVOTS

Compact reliable multiaxis pivot
M-FS-23311 B77-10211 05

PLASTERS

Plaster core washout tool
MSC-16635 B77-10314 07

PLASTIC COATINGS

Flexible foam masking for parylene coating
M-FS-23129 B77-10138 08

PLATENS

Shrink tubing identifier
MSC-16430 B77-10130 08

PLATINUM COMPOUNDS

New process produces high-power Schottky diodes
LEWIS-12749 B77-10337 01

PLAYBACKS

Record-player 'voice' for mutes
M-FS-21592 B77-10087 05

PLETHYSMOGRAPHY

Multichannel implantable telemetry system
ARC-11079 B77-10288 05

PLOTTING

WOLF contouring and plotting package
GSFC-12326 B77-10453 09

PLUMES

Atmospheric interaction plume
LANGLEY-12203 B77-10110 06

PLUNGERS

Flat-package DIP handling tool
GSFC-12201 B77-10315 07
Miniature diaphragm valve for medical equipment
LANGLEY-11775 B77-10398 05

PNEUMATIC EQUIPMENT

Method of laminating using a pneumatic anvil
LANGLEY-11850 B77-10135 08

PNEUMATIC PROBES

Dynamic calibration of flowmeter
LANGLEY-12023 B77-10100 06

POGO EFFECTS

Hydraulic pressure stabilization and 'Pogo' suppression
M-FS-19287 B77-10105 06

POLARIZATION (WAVES)

Electrically-controlled variable-color optical filters
 MSC-14944 B77-10049 03
 Beam-splitter for infrared detection of pollutants
 LANGLEY-12073 B77-10054 03

POLARIZATION CHARACTERISTICS

Electromagnetic power absorber
 NPO-13830 B77-10174 03

POLLUTION

Beam-splitter for infrared detection of pollutants
 LANGLEY-12073 B77-10054 03

POLLUTION CONTROL

Low-temperature coal desulfurization
 NPO-13937 B77-10166 03

POLLUTION MONITORING

Dust-contamination monitor
 M-FS-23702 B77-10272 03

POLYAMIDE RESINS

Flame and acid resistant polyimide fibers
 MSC-16074 B77-10282 04

POLYCRYSTALS

Low-cost polycrystalline process for solar cells
 GSFC-12022 B77-10014 01

POLYIMIDE RESINS

A new polyimide laminatine resin
 LANGLEY-12211 B77-10194 04
 Polyimide thin-film dielectrics on ferroelectrics
 LANGLEY-11996 B77-10239 08
 Simplified systematic production of graphite/polymide prepreg
 LANGLEY-12266 B77-10393 04

POLYIMIDES

Improved processability of addition polyimides
 LANGLEY-12054 B77-10078 04
 Soluble, thermally-stable aromatic polyimides
 LANGLEY-12092 B77-10193 04
 A new polyimide laminatine resin
 LANGLEY-12211 B77-10194 04
 Gold recovery process from polyimide film
 MSC-16650 B77-10196 04
 Polyimide thin-film dielectrics on ferroelectrics
 LANGLEY-11996 B77-10239 08
 Simplified systematic production of graphite/polymide prepreg
 LANGLEY-12266 B77-10393 04

POLYMER CHEMISTRY

Solubility-parameter 'spectroscopy'
 NPO-13829 B77-10073 04
 Porous poly-HEMA bead synthesis
 NPO-13383 B77-10075 04
 Tensile viscosities of non-Newtonian fluids
 NPO-13973 B77-10197 04

POLYMER PHYSICS

Estimating molar volume and expansion
 NPO-13404 B77-10072 04

POLYMERIZATION

Improved processability of addition polyimides
 LANGLEY-12054 B77-10078 04
 Rigidified inflatable structures
 MSC-16069 B77-10136 08
 A new polyimide laminatine resin
 LANGLEY-12211 B77-10194 04
 Simplified systematic production of graphite/polymide prepreg
 LANGLEY-12266 B77-10393 04

POROSITY

Vacuum-assisted impregnation of materials
 MSC-16785 B77-10317 08
 Controlled-porosity composite materials
 LANGLEY-12115 B77-10388 04
 Technology of welding aluminum alloys-III
 MSC-18083 B77-10433 08

POROUS MATERIALS

Transducer for ultrasonic inspection of porous materials
 MSC-19671 B77-10093 06
 Controlled-porosity composite materials
 LANGLEY-12115 B77-10388 04

POROUS PLATES

Controlled-porosity composite materials
 LANGLEY-12115 B77-10388 04

PORTABLE EQUIPMENT

Portable mass spectrometer
 NPO-13664 B77-10043 03
 Portable aerosol-particle counter
 LEWIS-12130 B77-10278 03
 Solar cell measurements in the field
 NPO-14067 B77-10296 06
 Foldable beam
 LANGLEY-12077 B77-10424 07

POSITION (LOCATION)

Optical proximity detector
 NPO-13306 B77-10041 03

POSITION INDICATORS

Fast, accurate rangefinder
 NPO-13460 B77-10358 02

POSITIONING

Overhead-handling, universal-positioning device
 M-FS-23434 B77-10312 07

POSITIONING DEVICES (MACHINERY)

Cable-clamp installation tool
 NPO-13976 B77-10439 08

POTABLE WATER

Virus detection system
 MSC-16098 B77-10203 05

POTTING COMPOUNDS

Potting procedure for electronic components
 MSC-16290 B77-10324 08

POWDER (PARTICLES)

Metal/polyvinyl pyridine catalytic beads
 NPO-13912 B77-10384 04

POWDER METALLURGY

Radiation-resistant, electrically insulating cermet
 NPO-13120 B77-10189 04

POWER AMPLIFIERS

Constant-power source for resistive load
 M-FS-23171 B77-10010 01

POWER CONDITIONING

Low-loss energy storage flywheel
 GSFC-12030 B77-10118 07
 Power switch/filter for digital circuits
 MSC-16442 B77-10155 01

POWER EFFICIENCY

Save power in AC induction motors
 M-FS-23280 B77-10154 01

POWER LINES

Lightning-activated electrical ground for cable shields
 MSC-12745 B77-10019 01
 Circuit monitors powerline interruptions
 MSC-16763 B77-10346 01

POWER SPECTRA

Acoustic imaging system
 NPO-13888 B77-10046 03

POWER SUPPLIES

Power switch/filter for digital circuits
 MSC-16442 B77-10155 01
 Pulse-width-modulated high-current power supply
 MSC-14668 B77-10158 01
 Primary-controlled ac-to-dc power converter
 M-FS-23198 B77-10342 01

POWER SUPPLY CIRCUITS

Very low-power power supplies
 LANGLEY-12117 B77-10008 01
 Constant-power source for resistive load
 M-FS-23171 B77-10010 01
 Pulse-width-modulated high-current power supply
 MSC-14668 B77-10158 01
 Noise reduction in photomultiplier circuits
 LANGLEY-12091 B77-10160 01
 Precision voltage division without precision parts
 GSFC-12182 B77-10256 01
 Low-inductance bus lines
 MSC-16730 B77-10257 01
 Differential current driver
 MSC-16475 B77-10343 01

PREAMPLIFIERS

Biotelemetry system for ambulatory patients
 ARC-11142 B77-10401 05

PRECIPITATION PARTICLE MEASUREMENT

Particle Impact Noise Detection (PIND) test
 MSC-16208 B77-10099 06

PREIMPREGNATION

Simplified systematic production of graphite/polymide prepreg
 LANGLEY-12266 B77-10393 04

PRESSING (FORMING)

Method of laminating using a pneumatic anvil
 LANGLEY-11850 B77-10135 08

PRESSURE DISTRIBUTION

Transonic flow about airfoils
 LANGLEY-12265 B77-10421 06

PRESSURE MEASUREMENTS

High-pressure high-temperature transducer
 M-FS-23765 B77-10181 03

PRESSURE REDUCTION

Subsonic wind-tunnel performance
 ARC-11138 B77-10308 06

PRESSURE REGULATORS

Instrument measures dynamic pressure fluctuations
 LEWIS-12808 B77-10300 06

PRESSURE SENSORS

High-pressure high-temperature transducer
 M-FS-23765 B77-10181 03
 Detecting gas leaks in propellant lines
 M-FS-23404 B77-10215 06
 Instrument measures dynamic pressure fluctuations
 LEWIS-12808 B77-10300 06

PRESSURE VESSEL DESIGN

Pressurization systems
 LEWIS-12845 B77-10221 06

PRESSURE VESSELS

Multiple-compartment venting
 M-FS-23581 B77-10112 06

PRESSURE WELDING

Attaching strain gages by ultrasonic plastic welding
M-FS-23433 B77-10326 08

PRESSURIZING

Hydraulic pressure stabilization and 'Pogo' suppression
M-FS-19287 B77-10105 06
Pressurization systems
LEWIS-12845 B77-10221 06

PRINTED CIRCUITS

Printing circuits without a mask
NPO-11758 B77-10129 07
'Printed-circuit' rectenna
NPO-13886 B77-10261 02

PRINTERS

Shrink tubing identifier
MSC-16430 B77-10130 08
Inkjet color-printer control interface
LANGLEY-12103 B77-10265 02

PRINTERS (DATA PROCESSING)

WOLF contouring and plotting package
GSFC-12326 B77-10453 09

PRIORITIES

Priority protocol and control circuit
NPO-13901 B77-10030 02

PROBABILITY THEORY

Measurement of bit-error rate
MSC-12743 B77-10266 02

PRODUCT DEVELOPMENT

Aircraft engine weight and dimensions
LEWIS-12741 B77-10116 06

PRODUCTION MANAGEMENT

Measuring solar-cell quality
NPO-14100 B77-10295 06
Automated process planning system
ARC-11145 B77-10447 08

PRODUCTION PLANNING

Automated process planning system
ARC-11145 B77-10447 08

PROFILOMETERS

Computer-aided manufacture of sculptured objects
HQN-10914 B77-10140 08

PROJECT MANAGEMENT

Pert Time III
LANGLEY-11887 B77-10333 09

PROJECTORS

Obtaining a tomographic image from transmission projections
NPO-13739 B77-10449 09

PROPELLANT SPRAYS

Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07

PROPELLANT TANKS

Pressurization systems
LEWIS-12845 B77-10221 06

PROPELLANT TRANSFER

Pressurization systems
LEWIS-12845 B77-10221 06

PROPORTIONAL COUNTERS

Simplified sensing for cloud chamber
MSC-14708 B77-10058 03
Large-area radiation counters for low-level detection
M-FS-23304 B77-10379 03

PROPULSION

Pressurization systems
LEWIS-12845 B77-10221 06

PROSTHETIC DEVICES

Rotational joint for prosthetic leg
KSC-11004 B77-10083 05
Compact prosthetic hand
NPO-13906 B77-10085 05
Percutaneous and skeletal biocarbon implants
M-FS-23666 B77-10089 05

Compact reliable multiaxis pivot
M-FS-23311 B77-10211 05

Prosthetic urinary sphincters
M-FS-23717 B77-10290 05

PROTECTIVE CLOTHING

Cooling vest
MSC-16771 B77-10291 05

PROTECTIVE COATINGS

Improved intumescent coating
ARC-11042 B77-10068 04
Heat-moderating filler for intumescent coatings
ARC-11043 B77-10069 04
Flexible foam masking for parylene coating
M-FS-23129 B77-10138 08
Liquid-oxygen compatible, flame-resistant coating
KSC-11020 B77-10192 04
Control of electro-osmotic flow
M-FS-23554 B77-10283 04
Vacuum-assisted impregnation of materials
MSC-16785 B77-10317 08
Potting procedure for electronic components
MSC-16290 B77-10324 08
Testing internal coatings in metal vessels
MSC-16532 B77-10403 06

PROTONS

Radiation shielding methods
NPO-13923 B77-10065 03

PROTRACTORS

Tube-bending scale/protractor
MSC-16272 B77-10143 08

PROVING

Improved load-cell compensation
MSC-16466 B77-10214 06

PROXIMITY

Optical proximity detector
NPO-13306 B77-10041 03
Differential optical proximity detector
NPO-13939 B77-10274 03

PSEUDONOISE

Measurement of bit-error rate
MSC-12743 B77-10266 02

PSEUDORANDOM SEQUENCES

Secure communications system
MSC-16462 B77-10162 02

PSYCHROMETERS

Improved dewpoint-probe calibration
MSC-16811 B77-10406 06

PUBLIC ADDRESS SYSTEMS

Double-duty loudspeaker
MSC-16263 B77-10254 01

PULSE AMPLITUDE MODULATION

Combined PAM/PCM audio switching system
KSC-11015 B77-10029 02

PULSE CODE MODULATION

Differential pulse-code modulation
MSC-12506 B77-10027 02
Combined PAM/PCM audio switching system
KSC-11015 B77-10029 02
Time-division multiplexer uses digital gates
KSC-10878 B77-10032 02
Biotelemetry system for ambulatory patients
ARC-11142 B77-10401 05

PULSE COMMUNICATION

Digital-signal transfer between isolated systems
MSC-16508 B77-10344 01

PULSE DOPPLER RADAR

Subsurface 'radar' camera
NPO-13864 B77-10045 03

PULSE DURATION MODULATION

Pulse-width-modulated high-current power supply
MSC-14668 B77-10158 01
Inkjet color-printer control interface
LANGLEY-12103 B77-10265 02
Biotelemetry system for ambulatory patients
ARC-11142 B77-10401 05

PULSE FREQUENCY MODULATION TELEMETRY

Measurement of bit-error rate
MSC-12743 B77-10266 02

PULSE GENERATORS

Step motor damping for high-inertia loads
GSFC-11871 B77-10425 07

PURIFICATION

Porous poly-HEMA bead synthesis
NPO-13383 B77-10075 04
Virus detection system
MSC-16098 B77-10203 05

PYRANOMETERS

Solar meter with silicon photocell
NPO-14136 B77-10243 01

PYROHELIOMETERS

Active-cavity radiometer/pyroheliometer
NPO-13819 B77-10176 03

PYROLYSIS

Thermochemical-photolytic production of H₂ and O₂ from water
LANGLEY-12118 B77-10187 04

Q**QUALITY CONTROL**

Life-test methodology for mechanical components
M-FS-23082 B77-10095 06
Infrared temperature maps of EHD lubrication
LEWIS-12685 B77-10097 06
Nondestructive evaluation
LEWIS-12766 B77-10107 06
Thermal-impedance test for hybrid power devices
MSC-16643 B77-10153 01
Measuring solar-cell quality
NPO-14100 B77-10295 06
High-resolution X-ray recording and processing
LANGLEY-11722 B77-10381 03
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06
Technology of welding aluminum alloys-II
MSC-18082 B77-10432 08
Technology of welding aluminum alloys-III
MSC-18083 B77-10433 08
Technology of welding aluminum alloys-IV
MSC-18084 B77-10434 08
Linear dimension establishes weld integrity
NPO-13977 B77-10436 08
Tube-weld inspection tool
NPO-13978 B77-10437 08

QUARTZ

Fuel injector for jet-stirred combustors
LANGLEY-12146 B77-10232 07

R

RADAR ANTENNAS

Collapsible corrugated horn antenna
 LANGLEY-11745 B77-10018 01

RADAR DATA

Analysis of aircraft motions
 ARC-11132 B77-10307 06

RADAR EQUIPMENT

Multiline radar scan
 M-FS-23252 B77-10267 02

RADAR MEASUREMENT

Subsurface 'radar' camera
 NPO-13864 B77-10045 03

RADAR PHOTOGRAPHY

Subsurface 'radar' camera
 NPO-13864 B77-10045 03

RADAR SCANNING

Multiline radar scan
 M-FS-23252 B77-10267 02

RADAR SIGNATURES

Remote surface-height measurement
 NPO-13862 B77-10044 03

RADAR TRACKING

Multiline radar scan
 M-FS-23252 B77-10267 02

RADIAL FLOW

Particle trajectories in radial-inflow turbines
 LEWIS-12561 B77-10309 06

RADIANT FLUX DENSITY

Multiple-laser-energy detection system
 LANGLEY-12017 B77-10052 03

RADIANT HEATING

Air/salt/gravity-flow solar heating
 LANGLEY-12009 B77-10036 03
 Improved radiant-heat oven
 MSC-16761 B77-10304 06

RADIATION ABSORPTION

Active-cavity radiometer/pyroheliometer
 NPO-13819 B77-10176 03
 Simpler process produces more-efficient solar cell
 LANGLEY-12180 B77-10335 01

RADIATION COUNTERS

Properties of doped cesium iodide crystals
 M-FS-23148 B77-10202 04
 Portable aerosol-particle counter
 LEWIS-12130 B77-10278 03

RADIATION DETECTORS

Differential multi-MOSFET nuclear radiation sensor
 MSC-14444 B77-10059 03
 Large-area radiation counters for low-level detection
 M-FS-23304 B77-10379 03

RADIATION DISTRIBUTION

Vector sweep
 LEWIS-12281 B77-10332 09

RADIATION MEASURING INSTRUMENTS

Solar radiation shadow detector
 M-FS-23546 B77-10037 03
 Null-balancing microwave radiometer
 LANGLEY-11130 B77-10040 03
 Differential multi-MOSFET nuclear radiation sensor
 MSC-14444 B77-10059 03
 Active-cavity radiometer/pyroheliometer
 NPO-13819 B77-10176 03
 Radiometer gives true absorption and emission coefficients
 NPO-13677 B77-10273 03
 Simple device measures solar radiation
 M-FS-23751 B77-10366 03

RADIATION SHIELDING

Radiation shielding methods
 NPO-13923 B77-10065 03

RADIATION TOLERANCE

Radiation-resistant, electrically insulating cermet
 NPO-13120 B77-10189 04

RADIATIVE HEAT TRANSFER

Heat-dissipating aluminum wire
 M-FS-24274 B77-10438 08

RADIO FREQUENCIES

Accurate RF field monitoring in shielded enclosure
 MSC-16325 B77-10096 06

RADIO FREQUENCY INTERFERENCE

Satellite-based interference analyzer
 GSFC-12150 B77-10264 02

RADIO FREQUENCY SHIELDING

Accurate RF field monitoring in shielded enclosure
 MSC-16325 B77-10096 06

RADIO RELAY SYSTEMS

Emergency-vehicle VHF antenna
 M-FS-23638 B77-10263 02
 Versatile communications terminal
 MSC-16823 B77-10397 05

RADIO TELEMETRY

Measurement of bit-error rate
 MSC-12743 B77-10266 02

RADIO TRANSMISSION

Measurement of bit-error rate
 MSC-12743 B77-10266 02

RADIO TRANSMITTERS

Improving FM transmitter power and efficiency
 M-FS-23517 B77-10360 02

RADIOACTIVITY

Radioactive-gas separation technique
 GSFC-12019 B77-10169 03

RADIOCHEMISTRY

Whole-rock uranium analysis by fission-track activation
 NPO-13483 B77-10383 04

RADIOGRAPHY

Large-area soft X-ray imaging system
 GSFC-12093 B77-10042 03
 Real-time video display for angiocardigraphic studies
 ARC-10985 B77-10293 05
 Radiographic detection of cracks
 MSC-16541 B77-10301 06
 Neutron radiographic testing for hydrogen embrittlement
 M-FS-24193 B77-10407 06

RADIOMETERS

Noise adding radiometer improvement
 NPO-13108 B77-10039 03
 Null-balancing microwave radiometer
 LANGLEY-11130 B77-10040 03
 Electromagnetic power absorber
 NPO-13830 B77-10174 03
 Active-cavity radiometer/pyroheliometer
 NPO-13819 B77-10176 03
 Solar meter with silicon photocell
 NPO-14136 B77-10243 01
 Radiometer gives true absorption and emission coefficients
 NPO-13677 B77-10273 03

RADIOTELEPHONES

Versatile communications terminal
 MSC-16823 B77-10397 05

RADOMES

Rigidified inflatable structures
 MSC-16069 B77-10136 08

RANDOM LOADS

Defining structural limit zones
 M-FS-23582 B77-10451 09

RANDOM NOISE

Measurement of bit-error rate
 MSC-12743 B77-10266 02

RANDOM NUMBERS

Secure communications system
 MSC-16462 B77-10162 02

RANDOM SAMPLING

Three-level signal sampler has automatic threshold
 NPO-14042 B77-10157 01

RANGE FINDERS

Fast, accurate rangefinder
 NPO-13460 B77-10358 02

RANGEFINDING

Simplified command and range detection system
 NPO-13753 B77-10026 02

RANKINE CYCLE

Solar-powered air-conditioning
 M-FS-23276 B77-10106 06

RANKINE-HUGONIOT RELATION

Atmospheric interaction plume
 LANGLEY-12203 B77-10110 06
 Steady-state super/hypersonic inviscid flow
 LANGLEY-11891 B77-10113 06

REACTOR MATERIALS

Nickel-copper-zirconium alloy for catalytic reactors
 LEWIS-12245 B77-10188 04

READERS

Differential optical proximity detector
 NPO-13939 B77-10274 03

REAL TIME OPERATION

Hybrid optical/digital detector
 M-FS-23439 B77-10061 03

RECLAMATION

Gold recovery process from polyimide film
 MSC-16650 B77-10196 04

RECONSTRUCTION

Obtaining a tomographic image from transmission projections
 NPO-13739 B77-10449 09

RECORDING

Record-player 'voice' for mutes
 M-FS-21592 B77-10087 05

RECORDING INSTRUMENTS

Obtaining a tomographic image from transmission projections
 NPO-13739 B77-10449 09

RECTIFIERS

'Printed-circuit' rectenna
 NPO-13886 B77-10261 02
 Primary-controlled ac-to-dc power converter
 M-FS-23198 B77-10342 01

REDUNDANCY

Reliability analysis for data management systems
 M-FS-23208 B77-10331 09
 Calculating parts factors for redundant systems
 M-FS-23413 B77-10448 09

REDUNDANT COMPONENTS

Reliability analysis for data management systems
 M-FS-23208 B77-10331 09

REFERENCE ATMOSPHERES

Four-D global reference atmosphere
 M-FS-23336 B77-10066 03

REFINING

Screw-extruded coal
 NPO-13769 B77-10382 04

REFLECTANCE

Low-reflection silicon solar cells
 LEWIS-12418 B77-10318 08

Optical retroreflector
M-FS-23282 877-10372 03

REFLECTED WAVES
Optical retroreflector
M-FS-23282 877-10372-03

REFLECTING TELESCOPES
Anastigmatic three-mirror telescope
M-FS-23675 877-10373 03

REFLECTION
Low-reflection silicon solar cells
LEWIS-12418 877-10318 08

REFLECTOMETERS
Optical retroreflector
M-FS-23282 877-10372 03

REFLECTORS
Improved radiant-heat oven
MSC-16761 877-10304 06

REFRACTIVITY
Alinement tolerant Schlieren system
ARC-10971 877-10179 03

REFRACTORY MATERIALS
Heavy-duty sandblast nozzle
NPO-13823 877-10141 08

REFRIGERATING MACHINERY
Closed-cycle refrigerator for masers
NPO-13839 877-10056 03
Improving efficiency of existing
air-conditioning
GSFC-12217 877-10090 06

REFRIGERATORS
Measuring cryogenic-refrigerator cooling
capacity
NPO-13435 877-10411 06

REGENERATIVE COOLING
Removing CO₂ and moisture from air
MSC-14771 877-10092 06

REINFORCING FIBERS
Impact-resistant boron/aluminum
composites
LEWIS-12472 877-10184 04

RELIABILITY
Reliability analysis for data management
systems
M-FS-23208 877-10331 09
Calculating parts factors for redundant
systems
M-FS-23413 877-10448 09

RELIABILITY ENGINEERING
Reliability analysis for data management
systems
M-FS-23208 877-10331 09
Calculating parts factors for redundant
systems
M-FS-23413 877-10448 09

REMOTE HANDLING
Optical proximity detector
NPO-13306 877-10041 03
Compact prosthetic hand
NPO-13906 877-10085 05
Compact reliable multiaxis pivot
M-FS-23311 877-10211 05

REMOTE SENSORS
Data acquisition for solar and wind
energy
NPO-13908 877-10146 09
Edge-following algorithm for tracking
geological features
LANGLEY-12051 877-10328 09
Classification accuracy improvement
LANGLEY-12102 877-10329 09

REMOTELY PILOTED VEHICLES
Rotating mobile launcher
ARC-10979 877-10120 07

RESIDUAL GAS
Cartridge getter for vacuum jacketing
MSC-16610 877-10230 07

RESILIENCE
Resilient thermal barrier for high
temperatures
MSC-16338 877-10198 04

RESIN BONDING
Attaching strain gages by ultrasonic
plastic welding
M-FS-23433 877-10326 08
Improved silicone-rubber-to-silicon-rub-
ber bonding
MSC-16419 877-10389 04

RESINS
A new polyimide laminating resin
LANGLEY-12211 877-10194 04

RESISTANCE HEATING
Constant-power source for resistive
load
M-FS-23171 877-10010 01
Flexible thermal laminate
MSC-12662 877-10387 04

RESISTANCE THERMOMETERS
Multichannel temperature sensor
M-FS-23749 877-10303 06

RESISTORS
Low-insertion-resistance current
monitor
GSFC-12278 877-10258 01

RESOLUTION
Mass spectrometer has wide angular
acceptance
NPO-14111 877-10170 03

RESONANT FREQUENCIES
Dynamic stability of multilayer sandwich
plates
NPO-11625 877-10108 06

RESTORATION
Restoration of bearings
LEWIS-12631 877-10323 08

RETROREFLECTION
Optical retroreflector
M-FS-23282 877-10372 03

RHEOLOGY
Determining viscosities of liquids
NPO-13406 877-10071 04

RIGGING
Monorail for production handling of large
parachutes
KSC-11042 877-10139 08

RIGID MOUNTING
Vacuum mounting for piezoelectric
transducers
MSC-16480 877-10313 07

ROASTING
Preparation of zinc orthotitanate
M-FS-23345 877-10186 04

ROCKET ENGINE DESIGN
Engine injectors
LEWIS-12846 877-10222 06
Disconnects, couplings, fittings, fixed
joints, and seals
LEWIS-12948 877-10430 07

ROCKET EXHAUST
Atmospheric interaction plume
LANGLEY-12203 877-10110 06

ROLLER BEARINGS
Restoration of bearings
LEWIS-12631 877-10323 08

ROTARY STABILITY
A spin-motor rotation detector
GSFC-11953 877-10007 01

ROTATING BODIES
Electronic shaft-angle encoder
LEWIS-12832 877-10351 01

ROTATING DISKS
Gearless speed-reduction motor
GSFC-12138 877-10311 07

ROTATING GENERATORS
A spin-motor rotation detector
GSFC-11953 877-10007 01
Commutator assembly technique
LANGLEY-11844 877-10132 08

ROTATING SHAFTS
Eliminate gas-entrained dirt from shaft
seals
LEWIS-11855 877-10124 07
Brushless tachometer gives speed and
direction
M-FS-23175 877-10353 01

ROTORS
Electro-optically-indexed microwave
switch
NPO-11851 877-10017 01
Heat pipe controls bearing temperature
LANGLEY-11846 877-10227 07
Gearless speed-reduction motor
GSFC-12138 877-10311 07

RTV-40 RUBBER (TRADEMARK)
Improved silicone-rubber-to-silicon-rub-
ber bonding
MSC-16419 877-10389 04

RTV-60 RUBBER (TRADEMARK)
Improved silicone-rubber-to-silicon-rub-
ber bonding
MSC-16419 877-10389 04

RUBBER COATINGS
Liquid-oxygen compatible,
flame-resistant coating.
KSC-11020 877-10192 04

RUNWAY LIGHTS
Spectrally-balanced chromatic
approach-lighting system
ARC-10990 877-10060 03

S

SAFETY DEVICES
Radiation shielding methods
NPO-13923 877-10065 03
Controlling fires in silver/zinc batteries
M-FS-22952 877-10220 06

SAFETY FACTORS
'Either-side-up' inflatable liferaft
LANGLEY-10241 877-10417 06

SAFETY MANAGEMENT
Mathematical model of fires
NPO-13950 877-10145 09
Controlling fires in silver/zinc batteries
M-FS-22952 877-10220 06

SAMPLING
Conditional sampling analysis for
turbulent flows
M-FS-23126 877-10330 09

SANDWICH STRUCTURES
Dynamic stability of multilayer sandwich
plates
NPO-11625 877-10108 06
Honeycomb chassis for electronic
components
NPO-13891 877-10237 08
Extruded edge members for
honeycombs
MSC-16428 877-10238 08

SATELLITE ANTENNAS
Satellite-based interference analyzer
GSFC-12150 877-10264 02
Rotating optical coupler for signal
transmission
NPO-14066 877-10371 03

- SATELLITE SOLAR ENERGY**
- CONVERSION**
Solar-cell array design handbook
NPO-14106 B77-10182 03
Changing sunlight to microwaves: A concept
NPO-14068 B77-10262 02
- SCALE (RATIO)**
Tube-bending scale/protractor
MSC-16272 B77-10143 08
- SCANNERS**
Ultrasonic-mammography apparatus
NPO-13935 B77-10207 05
Differential optical proximity detector
NPO-13939 B77-10274 03
- SCANNING**
Multiline radar scan
M-FS-23252 B77-10267 02
- SCATTERING**
Stray optical-radiation suppression
M-FS-23495 B77-10064 03
- SCHEDULING**
Drug-dosage indicator
GSFC-12139 B77-10210 05
PERT TIME III
LANGLEY-11887 B77-10333 09
- SCHLIENEN PHOTOGRAPHY**
Aliment tolerant Schlieren system
ARC-10971 B77-10179 03
Wide-field schlieren system
NPO-14174 B77-10370 03
- SCHOTTKY DIODES**
New process produces high-power
Schottky diodes
LEWIS-12749 B77-10337 01
- SCINTILLATION**
Properties of doped cesium iodide crystals
M-FS-23148 B77-10202 04
- SCINTILLATION COUNTERS**
Properties of doped cesium iodide crystals
M-FS-23148 B77-10202 04
Large-area radiation counters for low-level detection
M-FS-23304 B77-10379 03
- SCRAMBLING (COMMUNICATION)**
Secure communications system
MSC-16462 B77-10162 02
- SCRAP**
Gold recovery process from polyimide film
MSC-16650 B77-10196 04
- SCRUBBERS**
Space-age vacuum cleaning
NPO-14008 B77-10442 08
- SEALERS**
Liquid-oxygen compatible, flame-resistant coating.
KSC-11020 B77-10192 04
Vacuum-assisted impregnation of materials
MSC-16785 B77-10317 08
- SEALING**
Potting procedure for electronic components
MSC-16290 B77-10324 08
Adhesiveless and grooveless sealing technique
LANGLEY-11779 B77-10444 08
- SEALS (STOPPERS)**
Fluid-connector selection
M-FS-23072 B77-10109 06
Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
- No-spill touchup paint container
MSC-16269 B77-10428 07
Disconnects, couplings, fittings, fixed joints, and seals
LEWIS-12948 B77-10430 07
- SECURITY**
Secure communications system
MSC-16462 B77-10162 02
- SEGMENTS**
WOLF contouring and plotting package
GSFC-12326 B77-10453 09
- SELF ALIGNMENT**
Automatic channel trimming for control systems: A concept
MSC-16027 B77-10161 02
- SEMICONDUCTOR DEVICES**
Thermal-impedance test for hybrid power devices
MSC-16643 B77-10153 01
Solar-cell array design handbook
NPO-14106 B77-10182 03
Hall-effect toggle switch
MSC-16354 B77-10244 01
Magnetic rotary switch
MSC-16624 B77-10245 01
Safe handling practices for electrostatic-sensitive devices
MSC-16642 B77-10260 01
- SEMICONDUCTORS (MATERIALS)**
Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08
- SENSORS**
Bias-field equalizer for bubble memories
M-FS-23189 B77-10253 01
- SEPARATED FLOW**
Control of electro-osmotic flow
M-FS-23554 B77-10283 04
- SEPARATORS**
Flexible separator for alkaline batteries
LEWIS-12649 B77-10002 01
Rechargeable nickel-zinc batteries
LEWIS-12784 B77-10003 01
Collectors for vacuum-cleaning lines
MSC-17011 B77-10142 08
Bacteria/virus filter membrane
MSC-16388 B77-10204 05
- SEQUENCING**
Simplified command and range detection system
NPO-13753 B77-10026 02
Priority protocol and control circuit
NPO-13901 B77-10030 02
- SERVICE LIFE**
Fireman's lamp
M-FS-23783 B77-10305 06
Choosing the right connector
M-FS-23785 B77-10354 01
- SERVOCONTROL**
Angle-indicating digital servo
ARC-11036 B77-10024 02
Automatic channel trimming for control systems: A concept
MSC-16027 B77-10161 02
- SERVOMECHANISMS**
Adaptive control for weld skate
M-FS-23620 B77-10127 07
Cost-effective actuator tester
MSC-16324 B77-10302 06
- SERVOMOTORS**
Angle-indicating digital servo
ARC-11036 B77-10024 02
Compact prosthetic hand
NPO-13906 B77-10085 05
- SEWAGE**
Carbon-chlorine-carbon sewage treatment
NPO-13972 B77-10167 03
- SHADOWS**
Solar radiation shadow detector
M-FS-23546 B77-10037 03
- SHAFTS (MACHINE ELEMENTS)**
Eliminate gas-entrained dirt from shaft seals
LEWIS-11855 B77-10124 07
Electronic shaft-angle encoder
LEWIS-12832 B77-10351 01
- SHAPES**
Molding cork sheets to complex shapes
M-FS-23626 B77-10236 08
- SHEAR STRENGTH**
Allowable bending loads for mechanical fasteners
M-FS-23430 B77-10297 06
Ultrasonic strength evaluation of fiber-reinforced composites
LEWIS-12769 B77-10386 04
Automated predesign of aircraft
LANGLEY-12258 B77-10418 06
- SHEAR STRESS**
Interpreting honeycomb climbing-drum peel tests
M-FS-23319 B77-10298 06
- SHEATHS**
Use of miniature, single-wire, sheathed thermocouples
LEWIS-12436 B77-10104 06
- SHIELDING**
Lightning-activated electrical ground for cable shields
MSC-12745 B77-10019 01
Protection against explosive blasts
LANGLEY-12014 B77-10219 06
- SHOCK WAVES**
Atmospheric interaction plume
LANGLEY-12203 B77-10110 06
Aircraft aerodynamics at high angles of attack
ARC-11133 B77-10225 06
Quiet wind tunnel
M-FS-23099 B77-10416 06
Transonic flow about airfoils
LANGLEY-12265 B77-10421 06
- SIDE-LOOKING RADAR**
Remote surface-height measurement
NPO-13862 B77-10044 03
- SIGNAL DETECTION**
Wide-dynamic-range detector
GSFC-12149 B77-10151 01
Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02
- SIGNAL DETECTORS**
Wide-dynamic-range detector
GSFC-12149 B77-10151 01
- SIGNAL DISTORTION**
Distortion in AM-baseband telemetry
M-FS-22180 B77-10034 02
Bidirectional Amplifier
KSC-10856 B77-10150 01
- SIGNAL ENCODING**
Simplified command and range detection system
NPO-13753 B77-10026 02
Efficient bit-error detecting code
KSC-11039 B77-10363 02
- SIGNAL GENERATORS**
Burst simulator for laser-Doppler velocimeter
LANGLEY-11859 B77-10048 03

SIGNAL RECEPTION

Wide-dynamic-range detector
GSFC-12149 B77-10151 01

SIGNAL TO NOISE RATIOS

Three-level signal sampler has automatic threshold
NPO-14042 B77-10157 01
Noise reduction in photomultiplier circuits
LANGLEY-12091 B77-10160 01
Measurement of bit-error rate
MSC-12743 B77-10266 02
Biotelemetry system for ambulatory patients
ARC-11142 B77-10401 05

SIGNAL TRANSMISSION

Rotating optical coupler for signal transmission
NPO-14066 B77-10371 03

SIGNATURE ANALYSIS

Improved method of signature extraction
LANGLEY-12101 B77-10033 02

SILANES

Control of electro-osmotic flow
M-FS-23554 B77-10283 04

SILICA GLASS

High-temperature glass and glass coatings
ARC-11051 B77-10067 04

SILICON

Welding single-crystal silicon to molybdenum
NPO-13735 B77-10341 01

SILICON FILMS

Inexpensive silicon sheets for solar cells
NPO-14069 B77-10338 01

SILICON JUNCTIONS

Production of large 'violet' solar cells
M-FS-23549 B77-10012 01
Low-cost polycrystalline process for solar cells
GSFC-12022 B77-10014 01

SILICON POLYMERS

Preparation of organosiloxy-molybdenum monomer
M-FS-23704 B77-10185 04

SILICONE RESINS

thermal-control coatings for fabrics
LANGLEY-11756 B77-10392 04

SILICONE RUBBER

Improved silicone-rubber-to-silicon-rubber bonding
MSC-16419 B77-10389 04
Debonding agent for silicone-rubber adhesive
MSC-16933 B77-10390 04

SILVER ZINC BATTERIES

Controlling fires in silver/zinc batteries
M-FS-22952 B77-10220 06

SIMULATION

Op-amp gyrator simulates high Q inductor
M-FS-23514 B77-10259 01

SIMULATORS

Aircraft-noise synthesizer
LANGLEY-11858 B77-10028 02
Burst simulator for laser-Doppler velocimeter
LANGLEY-11859 B77-10048 03
Cost-effective actuator tester
MSC-16324 B77-10302 06

SINGLE CRYSTALS

Drilling technique for crystals
M-FS-23580 B77-10320 08

SINTERING

Electrically-nonlinear composite material
NPO-13858 B77-10284 04

SITES

Solar radiation shadow detector
M-FS-23546 B77-10037 03

SKY RADIATION

Solar meter with silicon photocell
NPO-14136 B77-10243 01

SLEEVES

Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03

SLITS

Modular multiapertures for light sensors
M-FS-23249 B77-10321 08

SLOTTED WIND TUNNELS

Quiet wind tunnel
M-FS-23099 B77-10416 06

SOLAR ARRAYS

High-performance flat-plate solar collector
NPO-13883 B77-10035 03
Solar-cell array design handbook
NPO-14106 B77-10182 03
'Solar ponds'
NPO-13581 B77-10276 03
Solar cell measurements in the field
NPO-14067 B77-10296 06
Inexpensive silicon sheets for solar cells
NPO-14069 B77-10338 01

SOLAR CELLS

Production of large 'violet' solar cells
M-FS-23549 B77-10012 01
Low-cost polycrystalline process for solar cells
GSFC-12022 B77-10014 01
Low-cost solar-cell fabrication
NPO-13992 B77-10015 01
Solar-cell array design handbook
NPO-14106 B77-10182 03
Measuring solar-cell quality
NPO-14100 B77-10295 06
Solar cell measurements in the field
NPO-14067 B77-10296 06
Low-reflection silicon solar cells
LEWIS-12418 B77-10318 08
Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08
Simpler process produces more-efficient solar cell
LANGLEY-12180 B77-10335 01
Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
Inexpensive silicon sheets for solar cells
NPO-14069 B77-10338 01
Low-resistance contacts for GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01

SOLAR COLLECTORS

High-performance flat-plate solar collector
NPO-13883 B77-10035 03
Tower-supported solar-energy collector
NPO-13810 B77-10038 03
Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03
Humidity-resistant black-nickel coatings
M-FS-23650 B77-10077 04
Absorption generator for solar-powered air-conditioner
M-FS-23417 B77-10091 06

Solar-powered air-conditioning
M-FS-23276 B77-10106 06
Modular test system for solar collectors
M-FS-23701 B77-10173 03
Solar-power mountain concept
NPO-13861 B77-10177 03
Inexpensive high-temperature solar collector
NPO-13979 B77-10178 03
'Solar ponds'
NPO-13581 B77-10276 03
Window-mounted auxiliary solar heater
M-FS-23719 B77-10277 03
Multichannel temperature sensor
M-FS-23749 B77-10303 06
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
Direct-heating solar-collector dump valve
M-FS-23679 B77-10367 03
Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03

SOLAR ENERGY

Production of large 'violet' solar cells
M-FS-23549 B77-10012 01
Low-cost polycrystalline process for solar cells
GSFC-12022 B77-10014 01
Low-cost solar-cell fabrication
NPO-13992 B77-10015 01
Air/salt/gravity-flow solar heating
LANGLEY-12009 B77-10036 03
Solar radiation shadow detector
M-FS-23546 B77-10037 03
Tower-supported solar-energy collector
NPO-13810 B77-10038 03
Fresnel-lens solar-energy concentrator
M-FS-23575 B77-10062 03
Absorption generator for solar-powered air-conditioner
M-FS-23417 B77-10091 06
Solar-powered air-conditioning
M-FS-23276 B77-10106 06
Solar-power mountain concept
NPO-13861 B77-10177 03
Solar meter with silicon photocell
NPO-14136 B77-10243 01
'Solar ponds'
NPO-13581 B77-10276 03
Window-mounted auxiliary solar heater
M-FS-23719 B77-10277 03
Measuring solar-cell quality
NPO-14100 B77-10295 06
Solar cell measurements in the field
NPO-14067 B77-10296 06
Low-reflection silicon solar cells
LEWIS-12418 B77-10318 08
Ion-beam sputtering increases solar-cell efficiency
LEWIS-12895 B77-10319 08
Simpler process produces more-efficient solar cell
LANGLEY-12180 B77-10335 01
Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
Inexpensive silicon sheets for solar cells
NPO-14069 B77-10338 01
Low-resistance contacts for GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01
Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02

- Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
Heat exchanger for solar water heaters
M-FS-23711 B77-10365 03
Simple device measures solar radiation
M-FS-23751 B77-10366 03
Direct-heating solar-collector dump valve
M-FS-23679 B77-10367 03
'Tubless' flat-plate solar collector
NPO-13897 B77-10368 03
Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03
- SOLAR ENERGY ABSORBERS**
Air/salt/gravity-flow solar heating
LANGLEY-12009 B77-10036 03
Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02
'Tubless' flat-plate solar collector
NPO-13897 B77-10368 03
- SOLAR ENERGY CONVERSION**
Air/salt/gravity-flow solar heating
LANGLEY-12009 B77-10036 03
Modular test system for solar collectors
M-FS-23701 B77-10173 03
Changing sunlight to microwaves: A concept
NPO-14068 B77-10262 02
Multichannel temperature sensor
M-FS-23749 B77-10303 06
Heat exchanger for solar water heaters
M-FS-23711 B77-10365 03
Direct-heating solar-collector dump valve
M-FS-23679 B77-10367 03
'Tubless' flat-plate solar collector
NPO-13897 B77-10368 03
- SOLAR GENERATORS**
High-performance flat-plate solar collector
NPO-13883 B77-10035 03
Modular test system for solar collectors
M-FS-23701 B77-10173 03
Solar-power mountain concept
NPO-13861 B77-10177 03
Changing sunlight to microwaves: A concept
NPO-14068 B77-10262 02
- SOLAR HEATING**
Air/salt/gravity-flow solar heating
LANGLEY-12009 B77-10036 03
Inexpensive high-temperature solar collector
NPO-13979 B77-10178 03
Window-mounted auxiliary solar heater
M-FS-23719 B77-10277 03
Heat exchanger for solar water heaters
M-FS-23711 B77-10365 03
Simple device measures solar radiation
M-FS-23751 B77-10366 03
Direct-heating solar-collector dump valve
M-FS-23679 B77-10367 03
'Tubless' flat-plate solar collector
NPO-13897 B77-10368 03
- SOLAR INSTRUMENTS**
Simple device measures solar radiation
M-FS-23751 B77-10366 03
- SOLAR RADIATION**
Active-cavity radiometer/pyroheliometer
NPO-13819 B77-10176 03
Inexpensive high-temperature solar collector
NPO-13979 B77-10178 03
- Solar meter with silicon photocell
NPO-14136 B77-10243 01
Simpler process produces more-efficient solar cell
LANGLEY-12180 B77-10335 01
Simple device measures solar radiation
M-FS-23751 B77-10366 03
- SOLAR SENSORS**
Acquisition and cruise sensing for attitude control
NPO-13722 B77-10361 02
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
- SOLAR SIMULATION**
Modular test system for solar collectors
M-FS-23701 B77-10173 03
- SOLDERING**
Vacuum soldering a metalized ceramic to a metal carrier
NPO-14037 B77-10435 08
- SOLENOID VALVES**
Self-aligning valve poppet and seat
LANGLEY-11623 B77-10426 07
- SOLENOIDS**
Density measurements of trace gases
ARC-10760 B77-10168 03
- SOLID PHASES**
Homogeneous eutectic of Pb-Sb
M-FS-23766 B77-10385 04
- SOLID SOLUTIONS**
Stress, corrosion, and heat resistant cermet
NPO-13690 B77-10191 04
- SOLID STATE DEVICES**
Hall-effect toggle switch
MSC-16354 B77-10244 01
Magnetic rotary switch
MSC-16624 B77-10245 01
Inexpensive solid-state monitoring circuit
LEWIS-12848 B77-10252 01
- SOLID STATE PHYSICS**
Vibration improves single-crystal yield
M-FS-23683 B77-10133 08
- SOLID SURFACES**
ESCA measurement of insulator surfaces
NPO-13772 B77-10076 04
Measurement of friction and wear
LEWIS-12910 B77-10429 07
- SOLUBILITY**
Solubility-parameter 'spectroscopy'
NPO-13829 B77-10073 04
Soluble, thermally-stable aromatic polyimides
LANGLEY-12092 B77-10193 04
- SOLVENTS**
Debonding agent for silicone-rubber adhesive
MSC-16933 B77-10390 04
- SORPTION**
Two pumps reduce maser weight
M-FS-23265 B77-10375 03
- SOUND INTENSITY**
Differential sound-level meter
LANGLEY-12106 B77-10094 06
- SOUND PRESSURE**
Differential sound-level meter
LANGLEY-12106 B77-10094 06
- SOUND TRANSDUCERS**
Differential sound-level meter
LANGLEY-12106 B77-10094 06
Ultrasonic-mammography apparatus
NPO-13935 B77-10207 05
- SOUND WAVES**
Acoustic imaging system
NPO-13888 B77-10046 03
- SPACE MANUFACTURING**
The processing of materials in outer space
M-FS-23695 B77-10240 08
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- CLATTERBUCK, C.**
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- CLAYSMITH, C. R.**
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M-FS-23702 B77-10272 03
- CLEVENGER, W. B., JR.**
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- CONWAY, E. J.**
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- CORE, T. C.**
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- CORMACK, A., III**
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- CORNISH, A. F.**
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- COSBY, R. M.**
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M-FS-23575 B77-10062 03
- COULBERT, C. D.**
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NPO-13950 B77-10145 09
- COVERDALE, J.**
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- CRAWFORD, D.**
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- CROSIER, W. G.**
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- CROWELL, R. T.**
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- CRUTCHER, H. L.**
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- DAHMS, D.**
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GSFC-12199 B77-10134 08
- DAVENPORT, J. B., JR.**
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LANGLEY-11844 B77-10132 08
- DAVID, L. P.**
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MSC-16233 B77-10233 08
- DAVIDSON, M. C.**
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M-FS-23150 B77-10201 04
- DAVIS, C. C.**
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LANGLEY-11844 B77-10132 08
- DAVIS, D. C.**
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- DAVIS, H. S.**
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- DAVIS, W. T.**
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- DAWN, F. S.**
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MSC-12662 B77-10387 04
- DECAPRIO, A.**
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GSFC-12093 B77-10042 03
- DEMONBRUN, F. R.**
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- DEOLIVEIRA, W. A.**
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- DEROCHER, W. L., JR.**
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- DETERS, R. A.**
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- DEYOUNG, R. J.**
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- DICKINSON, R. M.**
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NPO-14068 B77-10262 02
- DIMEFF, J.**
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- DOLAN, F. J.**
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M-FS-23701 B77-10173 03
- DOLAND, G. D.**
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MSC-16462 B77-10162 02
- DONALDSON, J. A.**
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MSC-16144 B77-10209 05
- DONEHOO, L. K.**
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M-FS-23581 B77-10112 06
- DONOVAN, M. P.**
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NPO-13735 B77-10341 01
- DORMAN, J.**
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NPO-13979 B77-10178 03
- DOWSON, D.**
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- DOYLE, J. D.**
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M-FS-24274 B77-10438 08
- DREYER, W. J.**
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- DRUMMOND, J. D.**
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- DUBOW, J. B.**
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- DUFRANE, K. F.**
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- DUNSTAN, J.**
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M-FS-24193 B77-10407 06
- DURDEN, J.**
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NPO-13805 B77-10163 02
- DZIENIS, D. A.**
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- EATON, A. F.**
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MSC-16846 B77-10374 03
- EBERHARDT, R. N.**
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- ECKERT, W. T.**
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- EDELSTEIN, F.**
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M-FS-23292 B77-10413 06
- EDWARDS, D. K.**
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- EDWARDS, T. R.**
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M-FS-23699 B77-10022 01
- EGGER, R. L.**
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MSC-16466 B77-10214 06
- ELL, L. J.**
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M-FS-23248 B77-10427 07
- ELMENDORF, H. M.**
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- ENINGER, J. E.**
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ARC-11001 B77-10412 06
- ENSOR, L. C.**
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- ESCUE, W. T.**
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- ESKOVITZ, A. J.**
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- EVANS, H. E.**
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GSFC-12030 B77-10118 07
- F**
- FALLS, L. W.**
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M-FS-23523 B77-10149 09
- FANNIN, B. B.**
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M-FS-23495 B77-10064 03
- FEAGLEY, H. K.**
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- FEDORS, R. F.**
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NPO-13406 B77-10071 04
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- FELDSTEIN, C.**
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NPO-13910 B77-10292 05
- FENG, C. C.**
Ultrasonic detection of bearing defects
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- FENWICK, J. R.**
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'Pogo' suppression
M-FS-19287 B77-10105 06
- FERDIE, R. D.**
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M-FS-23430 B77-10297 06
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M-FS-23319 B77-10298 06
- FIELD, F. W.**
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GSFC-12149 B77-10151 01
- FISHER, A.**
Pretreatment for strong
aluminum/epoxy/aluminum bonds
GSFC-12232 B77-10195 04
- FOGAL, G. L.**
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M-FS-23588 B77-10275 03
- FOWLER, J.**
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MSC-12743 B77-10266 02
- FOX, D. A.**
Versatile solid-state relay
M-FS-23632 B77-10247 01
- FRALICK, G. C.**
Multipurpose miniature drag-force
anemometer
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- FRAME, W. W.**
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MSC-16034 B77-10013 01
- FRANCISCUS, L. C.**
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LEWIS-12741 B77-10116 06
- FRANKE, J. M.**
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- FRANKLIN, D. B.**
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M-FS-23416 B77-10200 04
- FRASER, A. S.**
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MSC-16098 B77-10203 05
- FRASER, R.**
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GSFC-12201 B77-10315 07
- FRAZER, R. E.**
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NPO-13935 B77-10207 05
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NPO-14089 B77-10208 05
- FREEDMAN, L. A.**
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MSC-16119 B77-10055 03
- FREUND, W.**
Multichannel implantable telemetry
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ARC-11079 B77-10288 05
- FRYE, J. A.**
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temperatures
MSC-16338 B77-10198 04
- FRYER, T. B.**
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system
ARC-11079 B77-10288 05

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ARC-11142 B77-10401 05
- FURUIKE, T.**
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- FYMAT, A. L.**
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- GALLAGHER, B. D.**
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NPO-14037 B77-10435 08
- GANGULI, P. S.**
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NPO-13937 B77-10166 03
- GARABEDIAN, P.**
Transonic flow about airfoils
LANGLEY-12265 B77-10421 06
- GARCIA, E. E.**
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MSC-16797 B77-10419 06
- GARD, L. H.**
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M-FS-23620 B77-10127 07
- GARDNER, R. A.**
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NPO-13108 B77-10039 03
- Data acquisition for solar and wind energy
NPO-13908 B77-10146 09
- GARDNER, R. E.**
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MSC-16643 B77-10153 01
- GARFINKEL, M.**
New process produces high-power Schottky diodes
LEWIS-12749 B77-10337 01
- GATES, D. W.**
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M-FS-23345 B77-10186 04
- GAVALAS, G. R.**
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NPO-13937 B77-10166 03
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M-FS-23695 B77-10240 08
- GIFFIN, C. E.**
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NPO-13664 B77-10043 03
- GILJE, R. I.**
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LANGLEY-11473 B77-10103 06
- GILLIGAN, J. E.**
Preparation of zinc orthotitanate
M-FS-23345 B77-10186 04
- GINEZ, R.**
Technology of welding aluminum alloys-IV
MSC-18084 B77-10434 08
- GLAWE, G. E.**
Use of miniature, single-wire, sheathed thermocouples
LEWIS-12436 B77-10104 06

- GLESSNER, J. R.**
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MSC-16420 B77-10440 08
- GOAD, J. H., JR.**
Noise reduction in photomultiplier circuits
LANGLEY-12091 B77-10160 01
- GOLDSTEIN, H. E.**
High-temperature glass and glass coatings
ARC-11051 B77-10067 04
- GOLDSTEIN, R.**
Negative deuterium-ion source
NPO-14113 B77-10378 03
- GOODWIN, F.**
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MSC-16388 B77-10204 05
- GOODWIN, F. E.**
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GSFC-12059 B77-10053 03
- GORDON, M.**
Improved method of signature extraction
LANGLEY-12101 B77-10033 02
- GORDON, R. B.**
Advanced general-purpose computer
M-FS-23531 B77-10165 02
- GORENSTEIN, P.**
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GSFC-12093 B77-10042 03
- GOUDIE, L. A.**
Welding thermocouples to columbium
MSC-16676 B77-10446 08
- GRAF, J. E.**
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NPO-14113 B77-10378 03
- GRANA, D. C.**
Electrical generator uses ocean waves
LANGLEY-11551 B77-10006 01
- GREEN, C. L.**
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M-FS-23545 B77-10126 08
- GREEN, R. H.**
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NPO-13972 B77-10167 03
- GREGORY, G. L.**
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LANGLEY-12218 B77-10395 04
- GREGORY, T. J.**
Rotating mobile launcher
ARC-10979 B77-10120 07
- GRINER, D. B.**
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M-FS-23495 B77-10064 03
- GRUNTHANER, F. J.**
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NPO-13772 B77-10076 04
- GUNTER, W. D., JR.**
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ARC-10971 B77-10179 03
- GURSKY, H.**
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- GUSTAFSSON, V.**
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LEWIS-12949 B77-10380 03

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- HABEGER, A. R.**
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LANGLEY-12089 B77-10420 06
- HAINES, E. L.**
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NPO-13483 B77-10383 04
- HAMILTON, D. B.**
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M-FS-23082 B77-10095 06
- HAMILTON, S. L.**
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M-FS-21592 B77-10087 05
- HAMLET, J.**
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M-FS-23253 B77-10410 06
- HAMROCK, B. J.**
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LEWIS-12884 B77-10414 06
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LEWIS-12885 B77-10415 06
- HANAU, H.**
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LEWIS-12631 B77-10323 08
- HANEY, R.**
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GSFC-12019 B77-10169 03
- HARADA, Y.**
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M-FS-23345 B77-10186 04
- HARDY, D. H.**
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LEWIS-12848 B77-10252 01
- HARDY, W. N.**
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LANGLEY-11130 B77-10040 03
- HARF, K. G.**
'Exclusive-OR' frequency multiplier
MSC-16677 B77-10156 01
- Changing NRZ data to biphasic logic
MSC-16688 B77-10268 02
- HARMAN, H. S.**
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M-FS-23528 B77-10101 06
- HARNDEN, F. R., JR.**
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GSFC-12093 B77-10042 03
- HARPER, P.**
Primary-controlled ac-to-dc power converter
M-FS-23198 B77-10342 01
- HARPER, R.**
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MSC-16508 B77-10344 01
- HARPER, S. E.**
Simplified systematic production of graphite/polymide prepreg
LANGLEY-12266 B77-10393 04
- HARRIGILL, W. T., JR.**
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LEWIS-12791 B77-10345 01
- HARRIS, J. A.**
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M-FS-23369 B77-10285 04

- HARRISON, J. R.**
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MSC-18081 B77-10431 08
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MSC-18083 B77-10433 08
- HASKELL, D. R.**
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MSC-16428 B77-10238 08
- HASKELL, R. E.**
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MSC-16253 B77-10172 03
- HASTINGS, L. J.**
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M-FS-23575 B77-10062 03
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
- HEDGEPEETH, J. M.**
Foldable beam
LANGLEY-12077 B77-10424 07
- HEIER, W. C.**
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LANGLEY-11850 B77-10135 08
- HEISMAN, R. M.**
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MSC-16233 B77-10233 08
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MSC-16635 B77-10314 07
Leak detector uses ultrasonics
MSC-16803 B77-10409 06
- HELMS, C. R.**
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M-FS-23717 B77-10290 05
- HENRIKSON, C. H.**
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LANGLEY-11914 B77-10117 07
- HERMAN, C. F.**
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MSC-12506 B77-10027 02
- HERMANN, W. A.**
Optical proximity detector
NPO-13306 B77-10041 03
- HERNDON, E. P.**
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M-FS-23719 B77-10277 03
- HERR, R. W.**
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LANGLEY-12023 B77-10100 06
- HERRING, H. W.**
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M-FS-23416 B77-10200 04
- HERRING, L. L.**
Safe handling practices for electrostatic-sensitive devices
MSC-16642 B77-10260 01
- HERRING, R. L.**
Integrated temperature sensor
LANGLEY-12056 B77-10229 07
- HEWES, C. R.**
Charge-coupled differential amplifier
LANGLEY-12110 B77-10349 01
- HEYSER, R. C.**
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NPO-13739 B77-10449 09
- HINZE, W. L.**
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MSC-17011 B77-10142 08
- HOCKENBERGER, R. W.**
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KSC-11039 B77-10363 02
- HOFFLER, G. W.**
Acquisition system for biomedical data
MSC-16144 B77-10209 05
- HOFFMASTER, D. K.**
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LANGLEY-12117 B77-10008 01
- HOLANDA, R.**
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LEWIS-12436 B77-10104 06
- HOLLEY, L. D.**
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KSC-10856 B77-10150 01
- HOLT, J. W.**
Debonding agent for silicone-rubber adhesive
MSC-16933 B77-10390 04
- HONNELL, M. A.**
FM oscillator has improved deviation linearity
M-FS-23562 B77-10011 01
Improving FM transmitter power and efficiency
M-FS-23517 B77-10360 02
- HORMAN, D. P.**
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NPO-13975 B77-10235 08
- HOUSTON, D. W.**
Gold recovery process from polyimide film
MSC-16650 B77-10196 04
- HOVEL, H. J.**
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Anodization improves GaAs solar cell performance
LANGLEY-12164 B77-10336 01
Low-resistance contacts for GaAlAs/GaAs cells
LANGLEY-12201 B77-10339 01
- HOWARD, F. S.**
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KSC-11021 B77-10057 03
- HOWARD, P. W.**
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M-FS-23099 B77-10416 06
- HOWIKMAN, T. C.**
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M-FS-23679 B77-10367 03
- HOWLAND, R. G.**
Carbon-chlorine-carbon sewage treatment
NPO-13972 B77-10167 03
- HSU, G. C.**
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NPO-13937 B77-10166 03
- HUANG, Y.**
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M-FS-23208 B77-10331 09
- HUDGINS, J. I.**
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GSFC-12169 B77-10021 01
- HUEY, D. C.**
Improved numerical control of oscillator frequency
MSC-16747 B77-10347 01
- HUGULEY, J. C.**
Welding thermocouples to columbium
MSC-16676 B77-10446 08
- HUMPHRIES, T. S.**
Controlling stress-corrosion cracking
M-FS-23416 B77-10200 04
- HUMPHRIES, W. R.**
Simple device measures solar radiation
M-FS-23751 B77-10366 03
- HUNTER, T.**
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M-FS-23580 B77-10320 08
- HURD, W. J.**
Three-level signal sampler has automatic threshold
NPO-14042 B77-10157 01
- HUTCHBY, J. A.**
MIS diode structure in As+-implanted CdS
LANGLEY-12156 B77-10159 01
- ICELAND, W. F.**
Leak detector uses ultrasonics
MSC-16803 B77-10409 06
- IKAWA, H.**
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M-FS-23581 B77-10112 06
- IKRAMUDDIN, M.**
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HQN-10875 B77-10079 04
- ILES, P.**
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M-FS-23549 B77-10012 01
- IMIG, L. A.**
Fatigue-failure load indicator
LANGLEY-12027 B77-10213 06
- INGALLS, D. R.**
Bidirectional Amplifier
KSC-10856 B77-10150 01
- INGHAM, J. D.**
Solubility-parameter 'spectroscopy'
NPO-13829 B77-10073 04
Hollow-fiber H₂/O₂ fuel cell
NPO-13732 B77-10175 03
- INGRAM, M.**
Biological-activity monitor
NPO-14089 B77-10208 05
- ITALIANO, V.**
Field-of-view divider
MSC-16106 B77-10050 03
- ITTNER, N.**
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LEWIS-12149 B77-10128 07
- IVES, R. E.**
Adaptive control for weld skate
M-FS-23620 B77-10127 07
- IVIE, C. V.**
Rotating optical coupler for signal transmission
NPO-14066 B77-10371 03
- IWASAKI, R.**
Electromagnetic power absorber
NPO-13830 B77-10174 03
- JACKSON, D. E.**
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06
- JAIN, A.**
Remote surface-height measurement
NPO-13862 B77-10044 03
Subsurface 'radar' camera
NPO-13864 B77-10045 03
- JALUFKA, N. W.**
Nuclear-pumped gas lasers
LANGLEY-12131 B77-10047 03

- JAMESON, A.**
Transonic flow about airfoils
LANGLEY-12265 B77-10421 06
- JANKOWSKI, F.**
Quick-disconnect coupling/filter
M-FS-22323 B77-10228 07
- JARRETT, O. JR.**
Multiple-laser-energy detection system
LANGLEY-12017 B77-10052 03
- JAYROE, R. R.**
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M-FS-23043 B77-10450 09
- JELINEK, D.**
Thermal hydraulic analyzer
MSC-16797 B77-10419 06
- JENKINS, R. V.**
Laser-excited gas-component identifier
LANGLEY-12035 B77-10051 03
- JENSEN, R. N.**
Air/salt/gravity-flow solar heating
LANGLEY-12009 B77-10036 03
- JENSEN, W. S.**
Large-scale Fresnel lens solar concentrator
M-FS-23770 B77-10364 03
- JEWELL, R. A.**
A new polyimide laminating resin
LANGLEY-12211 B77-10194 04
- JHABVALA, M. D.**
Complementary DMOS/VMOS integrated-circuit-structure
GSFC-12190 B77-10340 01
- JOHANNSEN, K.**
Satellite-based interference analyzer
GSFC-12150 B77-10264 02
- JOHNSON, L. E.**
thermal-control coatings for fabrics
LANGLEY-11756 B77-10392 04
- JOHNSON, M.**
Overhead-handling, universal-positioning device
M-FS-23434 B77-10312 07
- JOHNSTON, A. R.**
Optical proximity detector
NPO-13306 B77-10041 03
Differential optical proximity detector
NPO-13939 B77-10274 03
Fast, accurate rangefinder
NPO-13460 B77-10358 02
- JOHNSTON, J. D.**
Compact reliable multi-axis pivot
M-FS-23311 B77-10211 05
- JONES, A. C.**
Null-balancing microwave radiometer
LANGLEY-11130 B77-10040 03
- JONES, R. E.**
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M-FS-23664 B77-10452 09
- JONES, R. L.**
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- JONES, W. C.**
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- JOPE, J.**
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ARC-11138 B77-10308 06
- JORDAN, T. M.**
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- JOSCELYN, E.**
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- JUENGST, M. J.**
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- JURGENSEN, R. F.**
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- JURSCAGA, G. M.**
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LANGLEY-11844 B77-10132 08
- JUSTUS, C. G.**
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- KADRMAS, K. A.**
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- KALFAYAN, S. H.**
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- KAN, H. P.**
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- KANDELMAN, A.**
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- KANE, J.**
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- KARIGAN, G. H.**
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- KATVALA, V. E.**
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- KAWABUS, E. W.**
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- KAYS, A. O.**
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LANGLEY-12115 B77-10388 04
- KEEFE, G. E.**
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- KEIR, A. R.**
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MSC-16635 B77-10314 07
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- KELLY, J. T.**
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- KENDALL, J. M., JR.**
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- KERLEY, J. J., JR.**
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- KERMODE, A. W.**
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- KERNICK, A.**
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- KERSTEN, L.**
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M-FS-23311 B77-10211 05
- KESSINGER, R.**
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- KHANNA, S. M.**
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- KING, K. J.**
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- KISTLER, R.**
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LANGLEY-12102 B77-10329 09
- KLEMM, R. E.**
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- KNAUS, R. V., JR.**
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- KOBAYASHI, H. S.**
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- KOJIMA, G. K.**
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- KOPP, G. F.**
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MSC-16324 B77-10302 06
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- KOR, L. J.**
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- KORB, L. J.**
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- KORN, D.**
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- KORSCH, D.**
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- KOSMO, J.**
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- KOUDOUNARIS, A.**
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- KRASCELLA, N. L.**
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- KRUPNICK, A. C.**
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- KRUSE, G. S.**
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 LANGLEY-12258 B77-10418 06
- KUCHTA, B. J.**
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 MSC-14927 B77-10114 06
- KURPLE, W.**
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 MSC-12743 B77-10266 02
- KUSLICH, J. E.**
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 GSFC-11953 B77-10007 01
- KUZNETZ, L. H.**
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 MSC-16727 B77-10294 05
- L**
- LAINTZ, D.**
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- LANALDE, B. H.**
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- LAMPERT, S.**
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 LANGLEY-12101 B77-10033 02
- LANDEL, R. F.**
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- LANSING, F. L.**
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 NPO-13979 B77-10178 03
- LAUDENSLAGER, J. B.**
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 NPO-13857 B77-10171 03
- LAUMANN, E. A.**
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 NPO-13763 B77-10119 07
- LAWSON, D. D.**
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 NPO-13829 B77-10073 04
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 NPO-13893 B77-10074 04
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 NPO-13732 B77-10175 03
- LEAF, W. D.**
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 MSC-16626 B77-10404 06
- LEBLANC, L. P.**
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 M-FS-23581 B77-10112 06
- LEE, R. D.**
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 ARC-11137 B77-10088 05
- LEHMAN, W.**
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- LEISE, E. M.**
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- LEISER, D. B.**
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- LESH, J. R.**
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- LEVINSON, S.**
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- LEWIS, J.**
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- LEWIS, J. C.**
 Linear dimension establishes weld integrity
 NPO-13977 B77-10436 08
- LEWIS, J. R.**
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 MSC-18084 B77-10434 08
- LI, C.**
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 M-FS-23683 B77-10133 08
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- LI, S. P.**
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 NPO-13892 B77-10020 01
 Record dielectric breakdown automatically
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- LIN, J. H.**
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- LIN, R. T. S.**
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 NPO-13973 B77-10197 04
- LIND, W. N.**
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 MSC-16702 B77-10352 01
- LINNECKE, C. B.**
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 MSC-16098 B77-10203 05
- LIPSCHUTZ, M. E.**
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 HQN-10875 B77-10079 04
- LIU, A. F.**
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 MSC-16436 B77-10226 06
- LIVERMORE, S.**
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 KSC-11057 B77-10359 02
- LOGAN, W. R.**
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 M-FS-23345 B77-10186 04
- LOMBARDI, T. J.**
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 M-FS-23531 B77-10165 02
- LONG, J. C.**
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 MSC-16320 B77-10148 09
- LOVE, A. W.**
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- LOWEN, D. J.**
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- LOWERY, J. R.**
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- LUDEKE, E. E.**
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- LUDWIG, L. P.**
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- LUEBBERS, C. J.**
 Cartridge getter for vacuum jacketing
 MSC-16610 B77-10230 07
- LUNDY, J. L.**
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- LYMAN, J.**
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 LANGLEY-11914 B77-10117 07
- LYNCH, C. R.**
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- LYSAGHT, M. S.**
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 MSC-16388 B77-10204 05
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- MA, L. N.**
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 MSC-16747 B77-10347 01
- MACCONNELL, J. W.**
 Ultrastable-frequency distribution system
 NPO-13836 B77-10031 02
- MADEY, J.**
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 GSFC-12138 B77-10311 07
- MAIO, N. J.**
 Improved fuel cell
 M-FS-23797 B77-10377 03
- MANDEL, G.**
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 LEWIS-12767 B77-10080 04
 Nondestructive evaluation
 LEWIS-12766 B77-10107 06
- MANDEL, H.**
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 MSC-16371 B77-10234 08
- MANDERS, F. M.**
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 LANGLEY-11914 B77-10117 07
- MANN, R.**
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 M-FS-23434 B77-10312 07
- MANN, W.**
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 ARC-11145 B77-10447 08
- MANN, W. A.**
 Compact prosthetic hand
 NPO-13906 B77-10085 05
- MANOLI, R.**
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 M-FS-16801 B77-10005 01
- MANUS, E. A.**
 Four-quadrant phase detector
 GSFC-12179 B77-10357 02
- MARANO, G. A.**
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 M-FS-23704 B77-10185 04

- MARCONI, F.**
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LANGLEY-11891 B77-10113 06
- MARQUIS, S.**
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ARC-11017 B77-10400 05
- MARSHALL, R. E.**
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LANGLEY-12103 B77-10265 02
- MARTIN, H. L.**
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M-FS-21632 B77-10122 07
- MARTIN, J. W.**
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LANGLEY-11779 B77-10444 08
- MASAKI, G. T.**
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GSFC-12326 B77-10453 09
- MASSEY, W. A.**
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LANGLEY-12073 B77-10054 03
- MATHESON, R. J.**
Wide-dynamic-range detector
GSFC-12149 B77-10151 01
- MATHEWSON, R. B.**
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M-FS-23248 B77-10427 07
- MAYNE, R. C.**
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NPO-14037 B77-10435 08
- MCCUTCHEON, E. P.**
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- MCDANIELS, D. A.**
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LEWIS-12472 B77-10184 04
- MCDONALD, G.**
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NPO-13883 B77-10035 03
- MCHATTON, A. D.**
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LANGLEY-12147 B77-10102 06
- MCHENRY, W. L.**
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MSC-16688 B77-10268 02
- MCHUGH, H. R.**
Power switch/filter for digital circuits
MSC-16442 B77-10155 01
- MCKANNAN, E. C.**
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M-FS-23416 B77-10200 04
- MCKAY, R. A.**
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NPO-13958 B77-10218 06
- MCLAUGHLIN, R.**
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LANGLEY-12101 B77-10033 02
- MELNYK, P.**
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LEWIS-12472 B77-10184 04
- MENICHELLI, V. J.**
Electrically-nonlinear composite material
NPO-13858 B77-10284 04
- MERCER, L. N.**
Primary-controlled ac-to-dc power converter
M-FS-23198 B77-10342 01
- MERCER, S. D.**
Ablative liner locates hotspots
MSC-16981 B77-10405 06
- MERCHANT, D. H.**
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M-FS-23582 B77-10451 09
- MERRIAM, A. S.**
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M-FS-23531 B77-10165 02
- MESSANO, E. A.**
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MSC-14668 B77-10158 01
- MEZA, R. G.**
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MSC-16626 B77-10404 06
- MICKA, E. A.**
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NPO-13282 B77-10098 06
- MIDDLETON, W. D.**
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LANGLEY-12237 B77-10422 06
- MILLER, A.**
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MSC-14944 B77-10049 03
- MILLER, C. G.**
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NPO-13581 B77-10276 03
- MILLER, R. I.**
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M-FS-15235 B77-10063 03
- MILLETT, A. U.**
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MSC-16272 B77-10143 08
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MSC-18084 B77-10434 08
- MIURA, H.**
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- MIYAGAWA, I.**
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M-FS-23580 B77-10320 08
- MOACANIN, J.**
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- MOGAVERO, L. N.**
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HQN-10914 B77-10140 08
- MONFORD, L. G.**
Fuel from wastes helps power diesel engines
MSC-16598 B77-10125 07
- MONTANO, J. W.**
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M-FS-23543 B77-10396 04
- MOONEY, V.**
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M-FS-23666 B77-10089 05
- MOORE, H. E.**
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MSC-14668 B77-10158 01
- MORGAN, R. D.**
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MSC-16814 B77-10391 04
- MORT, K. W.**
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ARC-11138 B77-10308 06
- MOUTRIE, C. L.**
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LEWIS-12281 B77-10332 09
- MUCCI, J.**
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M-FS-23369 B77-10285 04
- MUNIZ, J. R.**
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MSC-16371 B77-10234 08
- MURRAY, J. G.**
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M-FS-23417 B77-10091 06
- MYERS, C. E.**
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KSC-10878 B77-10032 02
- MYERS, I. T.**
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- NAGLE, E. M.**
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M-FS-23171 B77-10010 01
- NATHAN, R.**
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- NEFF, D. E.**
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NPO-11851 B77-10017 01
- NELLIS, D. O.**
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GSFC-12019 B77-10169 03
- NELSON, D. J.**
Fluid-line math model
MSC-16230 B77-10223 06
- NELSON, E. E.**
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M-FS-23416 B77-10200 04
- NEUGEBAUER, M. M.**
Mass spectrometer has wide angular acceptance
NPO-14111 B77-10170 03
- NEUPERT, W. M.**
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GSFC-12139 B77-10210 05
- NICKAL, D.**
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M-FS-23683 B77-10133 08
- NISSON, R. S.**
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NIXON, D. L.
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NPO-11851 B77-10017 01

NOBLES, C. M.
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MSC-16188 B77-10111 06

NOEL, M. B.
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NPO-13976 B77-10439 08

NOLA, F. J.
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M-FS-23280 B77-10154 01
Brushless tachometer gives speed and direction
M-FS-23175 B77-10353 01

NORONHA, P. J.
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M-FS-23259 B77-10286 04

NORTHAM, G. B.
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LANGLEY-12017 B77-10052 03

NOTTI, J. E., JR.
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LANGLEY-11846 B77-10227 07

NYIRI, E. J.
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MSC-16770 B77-10249 01

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LANGLEY-11623 B77-10426 07

OLIVER, G. D.
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NPO-11758 B77-10129 07

OLSEN, A. B.
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MSC-16354 B77-10244 01

ONEILL, R. F.
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LEWIS-12281 B77-10332 09

ORDIN, P. M.
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LEWIS-12720 B77-10147 09

OWENS, L. J.
Demand-controlled lighting
KSC-11010 B77-10023 02
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KSC-11030 B77-10082 05

Rotational joint for prosthetic leg
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NPO-13722 B77-10361 02

PAGEL, L. L.
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LANGLEY-12056 B77-10229 07

PALLAI, A. G.
Simplified sensing for cloud chamber
MSC-14708 B77-10058 03

PARKER, M. K.
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NPO-13868 B77-10445 08

PARKER, R. J.
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LEWIS-12631 B77-10323 08

PARNELL, T. A.
Large-area radiation counters for low-level detection
M-FS-23304 B77-10379 03

PARRA, G. T.
Angle-indicating digital servo
ARC-11036 B77-10024 02

PARTHASARATHY, S. P.
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NPO-14174 B77-10370 03

PATTERSON, W. J.
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M-FS-23554 B77-10283 04

PAULKOVICH, J.
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GSFC-12278 B77-10258 01

PAWLIK, E. V.
Heavy-duty sandblast nozzle
NPO-13823 B77-10141 08

PELOUCH, J. J., JR.
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LEWIS-12570 B77-10242 09

PENG, S. T. J.
Tensile viscosities of non-Newtonian fluids
NPO-13973 B77-10197 04

PENKO, P. E.
Instrument measures dynamic pressure fluctuations
LEWIS-12808 B77-10300 06

PERGAMENT, H. S.
Atmospheric interaction plume
LANGLEY-12203 B77-10110 06

PERKINS, G. S.
Heavy-duty sandblast nozzle
NPO-13823 B77-10141 08
Two-axis movable concentrating solar energy collector
NPO-13291 B77-10369 03

PERKINS, P.
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LEWIS-12949 B77-10380 03
Testing internal coatings in metal vessels
MSC-16532 B77-10403 06

PERLOUCH, J. J., JR.
Document retrieval and reporting
LEWIS-12401 B77-10334 09

PERREAULT, W. T.
Strong lightweight battery housing
M-FS-23079 B77-10004 01

PETERS, R. L.
No-spill touchup paint container
MSC-16269 B77-10428 07

PETERSON, R. E.
Humidity-resistant black-nickel coatings
M-FS-23650 B77-10077 04

PHILLIPS, W. M.
Heavy-duty sandblast nozzle
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Radiation-resistant, electrically insulating cermet
NPO-13120 B77-10189 04
Oxidation-resistant cermet
NPO-13666 B77-10190 04
Stress, corrosion, and heat resistant cermet
NPO-13690 B77-10191 04

PIERCE, B. D.
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NPO-13296 B77-10025 02

PLUMMER, R. F.
Shrink tubing identifier
MSC-16430 B77-10130 08

POE, C. C., JR.
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LANGLEY-12258 B77-10418 06

POLHEMUS, J. T.
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MSC-14916 B77-10287 05

POOL, S. L.
Versatile communications terminal
MSC-16823 B77-10397 05

POWELL, C. A.
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LANGLEY-11858 B77-10028 02

POWELL, J. A.
Electronic shaft-angle encoder
LEWIS-12832 B77-10351 01

PRASTHOFER, W. P.
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M-FS-23072 B77-10109 06

PRESLER, A. F.
Paralinear oxidation behavior
LEWIS-12677 B77-10081 04

PRIEBE, D. H. E.
Simple constant-current-regulated power supply
LEWIS-12894 B77-10251 01

PRYOR, P. P., JR.
Adaptive control for weld skate
M-FS-23620 B77-10127 07

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RADER, G. E.
Particle-impact noise detector (PIND)
MSC-16626 B77-10404 06

RAKICH, J. V.
Three-dimensional supersonic viscous flows
ARC-11087 B77-10115 06

RASMUSSEN, D.
Calibration faceplate for x-ray image intensifiers
ARC-11146 B77-10399 05
Alignment tool for X-ray image intensifiers
ARC-11017 B77-10400 05

RAUSCHENBACH, H. S.
Solar-cell array design handbook
NPO-14106 B77-10182 03

RAZOUK, R. E.
Apparatus for determining surface tension
NPO-13294 B77-10408 06

- READ, W. S.**
Honeycomb chassis for electronic components
NPO-13891 B77-10237 08
- REED, H. L.**
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MSC-16436 B77-10226 06
- REIBER, J. H. C.**
Real-time video display for angiocardigraphic studies
ARC-10985 B77-10293 05
- REID, M. S.**
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